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## Air-Conditioning in Great Britain

SUMMER is apt to be a disappointing season in this country, and though it is definitely erroneous to suppose, as we sometimes do in jest, that the yearly quota of warm weather in this country might often be compressed into a single day, many summers do "misfire" rather badly. Of late the reputation of the English climate has been elevated considerably by the occurrence of two really perfect summers in succession. People have definitely felt the need for iced air in railway carriages and have looked enviously upon the Americans with their air-conditioned trains. Not to the same degree, however, the folk who journeyed in the most up-to-date British trains. In the Pullman cars of the Brighton Belle, in the L.N.E.R. tourist trains, and in other equally modern railway stock, the problem of keeping summer passengers fresh and clean, has, on most occasions at least, proved no other than the problem of efficient ventilation. By continuously forcing fresh filtered air into a carriage the discomforts incidental to the less extreme kind of summer day have been almost completely obviated. Elsewhere in this issue, Mr. Stuart Miall describes a particular installation which, perhaps three days out of four, appears to meet both summer and winter conditions in this island quite satisfactorily. It does not represent the best that can be done, however, and we still feel that, notwithstanding difficulties, this, and nothing less should be provided in Pullman and other alleged luxury carriages, and in sleepers and dining cars.

## Hotel Service in Air-Conditioned Cars

A solution to the problem of housing the large numbers of delegates attending conventions who descend at intervals on American cities has been found more than once by lodging them in railway cars standing in sidings, but the Baltimore & Ohio Railway has gone one better at Washington recently, by providing air-conditioned stock. A single steam locomotive is used to supply steam and compressed air to all the vehicles, which include restaurant and bath cars. Service is provided at cost price, amounting to \$20 a car a day, since it is felt that by attracting more conventions to Washington the scheme will pay for itself in increased passenger traffic. Power for driving the dynamos and air-conditioning equipment on the cars is derived from motors taking their supply from a local electricity company, and spiked to the sleepers. America has already shown its appreciation of air-conditioned travel, and it may be expected to welcome no less cordially this provision of hotel facilities at moderate charges and in a healthy atmosphere.

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## The Week's Traffics

The traffic returns of the four groups this week all include Bank Holiday Monday, and the Sunday as well in the case of the L.N.E.R., and are compared with the same period of 1934. The passenger increases for the first half of the holiday week-end have been maintained or improved upon by all companies except the L.M.S.R., which, however, has failed only by £4,000 to repeat its previous advance. Last year this railway was £7,000 behind its 1933 passenger receipts for the second part of the holiday. All increases are well ahead of those shown in the same week of last year, and the Great Western figure compares with a decline of £6,000 in 1934. Last year's increases in goods and coal on all lines except the Southern have not, however, been repeated.

	32nd Week				Year to date.	
	Pass.	&c. Goods	&c. Coal	&c. Total	Inc. or Dec.	%
L.M.S.R.	.. + 36,000	- 3,000	- 5,000	+ 28,000	+ 458,000	+ 1.28
L.N.E.R.	.. + 29,000	- 4,000	- 8,000	+ 17,000	+ 93,000	+ 0.35
G.W.R.	.. + 24,000	+ 1,000	- 8,000	+ 17,000	+ 151,000	+ 0.99
S.R.	.. + 34,000	- 5,500	- 2,500	+ 26,000	+ 123,000	+ 1.00

Mersey and Liverpool Overhead receipts show gains of £470 and £119 respectively on the week.

\* \* \* \*

## U.S. Railways and the N.R.A. Decision

The effect on commerce and railway traffics of the decision of the U.S.A. Supreme Court that the National Industrial Recovery Act is unconstitutional is discussed in a recent issue of the *Railway Age*. Our contemporary estimates that the decision invalidating the Railroad Retirement Act, which was explained on page 1201 of our issue of June 21, 1935, is already saving the railways at the rate of \$30,000,000 a year, and will save them more as time passes. The railways were not subject to the N.I.R.A., but in the opinion of our contemporary the two decisions make it practically certain that much other legislation being urged upon Congress, especially by the railway labour unions, would speedily be held unconstitutional. Admittedly, the immediate result of the N.I.R.A. decision has been to cause uncertainty and confusion, and thereby to accelerate the recent decline of general business activity, but our contemporary regards it as certain that it will very soon stimulate competition, production, commerce, and traffic. Government and the labour unions have been trying almost exclusively to increase the purchasing power of wage earners, in disregard of the fact that in so far as their efforts have succeeded, it has been at the expense of the railways and industry generally,

and to such an extent that continued government interference with business administration would eventually ruin industry entirely. A new means of increasing individual incomes, to be effective in enabling industry (including transport) to dispose of its output, is called for. That would eliminate the paralyzing effect of government interference.

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### Overseas Railway Traffics

For the sixth week of the current financial year the Argentine railways that were showing decreases on the week and on the aggregate a fortnight ago are still presenting an unfavourable comparison. The Central Argentine total for six weeks is now £56,949 behind last year's figure, having fallen back a further £27,254 from its position compared with the first four weeks of 1934-5. The Buenos Ayres & Pacific, however, remains an exception from the downward trend with increases higher than before, and the Entre Rios is again showing favourable returns. The Canadian Pacific has better earnings for the 31st week and is now only £50,400 behind last year's aggregate, compared with a deficit of £134,000 after 29 weeks.

	No. of Week	Weekly Traffics	Inc. or Decrease	Aggregate Traffic	Inc. or Decrease
Buenos Ayres & Pacific	6th	74,031	+	3,737	436,057 + 12,326
Buenos Ayres Great Southern	6th	117,098	-	8,981	676,445 - 75,978
Buenos Ayres Western	6th	42,656	-	3,400	238,259 - 29,386
Central Argentine	6th	119,075	-	19,353	731,332 - 56,949
Canadian Pacific	31st	480,000	+	3,600	14,012,400 - 50,400
Bombay, Baroda & Central India	17th	175,375	-	29,775	2,736,975 - 29,400

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### Snack Bars "Down Under"

The description of the Paddington station snack bar in last week's issue reminds a correspondent of the station snack bars throughout Australia and New Zealand, which, although perhaps not so elaborately equipped as that at Paddington, are spacious, clean and attractive, and provide the only means of refreshment for passengers travelling long distances, as restaurant cars, save on two or three routes in Australia, are non-existent. Practically every train stops a few minutes for refreshments, which is announced by the guard a short time before reaching the place, and all the passengers surge out of the train and invade the bars in search of sandwiches, pies, rolls, and of course tea, or something stronger. At these stations most of the eating and drinking is done at the counters, where crowds of men, women, and children apparently endeavour to drink as much tea as possible in the usual seven minutes allowed. At the larger stations there is usually a dining room in which a "sit down" meal can be obtained, but the popular method of feeding is at one of the several counters or at the fairly tall mushroom tables scattered about the room. All food and drinks are good and cheap; the drinks consisting mainly of tea—the staple drink—or fruit or milk squashes, and the quick service by the white-robed waitresses is invariably excellent.

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### Training in Artificial Respiration

In publishing the article last week on the Holger Nielsen method of artificial respiration, we did not think it necessary to enlarge upon the importance of this subject to all engaged in railway work. From subsequent correspondence, however, it appears that some amplification of this aspect of the question may be necessary. The strength of the ambulance movement on the railways in itself shows the leading place accorded to first aid in the training of employees, and the Holger Nielsen method will add to the

equipment of men accustomed primarily to deal with injuries caused by weight and movement, by facilitating the restoration of vitality to victims of other forms of accident. Precautions against electric shock are of increasing importance as railway electrification spreads, and in such cases the artificial stimulation of the heart and respiratory organs is among the first tasks of the first aid worker. The effects of exhaust gases from internal combustion engines are another increasing danger to those who neglect ordinary precautions, and it should not be forgotten that any of the injuries to which men employed on the permanent way are exposed may lead to conditions of shock requiring treatment such as the Holger Nielsen method.

### Smoke Abatement in Chicago

The railways have played a leading part in the campaign for smoke abatement in Chicago, having reduced the volume of smoke produced by 93.4 per cent. from 1911 to 1933. This is a larger proportion than recorded by any of the other four industrial and domestic groups whose consumption of coal and output of smoke is measured by the Smoke Inspection Department of the city. The tonnage of coal consumed by locomotives working within the city limits has fallen from 1,850,000 to 1,102,053 over the same period, and the number of engines so employed stood at 1,205 in 1934 compared with 1,850 in 1911. This reduction has been contributed to by the use of larger engines, hauling longer trains, as well as by the relocation of marshalling yards. An article on this subject in a recent issue of *Baldwin Locomotives* includes some striking illustrations of locomotive depots, in which the effectiveness of smoke collecting and washing equipment, and of instruction for enginemen in the proper care of fires, is clearly seen. A display of smoke abatement methods and data originally housed at the Century of Progress Exhibition has been prolonged elsewhere, and should earn for the railways general recognition of their public spirit in employing more smoke abatement enginemen than the city of Chicago itself.

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### Palestine's First Main Line Locomotives

Before the war there was no main line railway system in Palestine, but for the prosecution of the campaign against the Turks it was necessary to build a line across the desert from Egypt, which was eventually pushed forward to Jerusalem and Haifa on the standard 4 ft. 8½ in. gauge. Some Baldwin 4-6-0 and a miscellaneous collection of odd locomotives, including L.S.W.R. 0-6-0 Beattie goods engines—some of which are still in service—were drafted to this line, which on the cessation of hostilities was operated as a main line between Palestine and Egypt. Traffic has steadily developed with the increasing prosperity of Palestine, but until the importation of the main line passenger locomotives built by the North British Locomotive Co. Ltd., and described in last week's issue, the bulk of the main line traffic had been worked by the 4-6-0 Baldwin engines. The present demand for heavier loads and higher speeds has now been met by the design of the new locomotives, which resemble generally the original Baldwins, but incorporate the latest equipment. A tractive effort of 28,500 lb. on a restricted axle load of 17 tons is obtained from two outside cylinders 20½ in. in diameter by 28 in. stroke, driving 5 ft. 7 in. coupled wheels and supplied with steam at 190 lb. per sq. in. The despatch of these engines from Glasgow, completely assembled, is illustrated on page 281. They were conveyed by road from the works to the riverside and there hoisted on to one of Christen Smith's "Belships."

### Level Crossings on the P.L.M.

Many level-crossing accidents in France, as elsewhere, are caused by vehicles being driven carelessly into the gates or barriers, and the P.L.M. has found that the expense of renewing or repairing the damaged barriers amounts to a substantial sum. Experiments have accordingly been undertaken during the last few years at about a dozen crossings with an improved warning apparatus, and it is now to be extended to some forty more. Its object is to provide a distinctive and arresting warning to road drivers when the barriers are closed, and it consists of a neon lamp in a parabolic reflector, operated by a high voltage dry battery with the aid of condensers and resistances. The red signal shows when the barriers are closed. The beam is directed to a point in the centre of the road 250 m. (273 yd.) away, but the spread is such that the signal can be clearly seen much further, in favourable cases up to about twice that distance. It is stated that the number of accidents has already been much reduced by this arrangement and that the cost of it is very reasonable.

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### High Speeds and the Track

In discussing Mr. W. F. McDermid's recent paper to the Institution of Locomotive Engineers on "Brakes for Streamlined Vehicles," Mr. H. Holcroft, of the Southern Railway, emphasised the importance of considering the inertia of the track in connection with the operation of high-speed trains. A train running at 100 m.p.h. covers about 50 yd. in a second, which means that 50 yd. of track, consisting of a pair of steel rails weighing 100 lb. a yard each and amounting to about 10,000 lb. in all, together with some 60 pairs of 45-lb. chairs and 60 sleepers, a total of approximately 10 tons, have all got to be depressed anything from  $\frac{1}{4}$  in. to  $\frac{3}{8}$  in. The force required to overcome the inertia of such a mass is considerable, and the retarding effect of that inertia both on the rate of depression and of recovery modifies the resistance at both ends of the train. It would therefore seem that the question of track resistance demands much closer investigation. A light railcar weighing about 30 tons and carrying some 60 passengers, if run at 100 m.p.h., glides along so quickly that its light weight scarcely has time to make much impression on the track, but it is another matter when heavier units are passing over the same track at lower speeds. Then the inertia of the supporting material is involved and tends to spread the load over a much greater length.

\* \* \* \*

### Tests on the Welding of Rails

A series of tests, made to ascertain the effect of electric arc welding on medium to high carbon steel rails, is reported by Mr. W. R. Maunder, Executive Engineer, Bombay Baroda & Central India Railway, in the July issue of the *Quarterly Technical Bulletin* edited and issued by the Civil Engineering Director of the Indian Railway Board. In February, 1932, six all-welded crossings were received in Bombay, in two of which the point and splice rails of the frog were found to be fractured. These crossings had been fabricated from sorbitised steel and in place of the usual bolts and keys, the distant blocks and bearing plates have been electrically welded to the crossing rails. No reasons, such as the possibility of rough handling, could be assigned for the fractures, and it was considered desirable that comprehensive tests should be made. These indicated that sorbitic rails behave no differently from ordinary untreated carbon steel rails when welded at the foot, that it does not matter whether the welding is done

parallel or at right angles to the rail, and that the use of different types of electrodes cannot be relied upon to produce any distinct difference in results. As a final conclusion the suggestion is offered by Mr. Maunder that the principal reason for failure when the foot of a rail is welded is the nicking caused either by undercutting or by the crater formed at the end of the weld. Such a crater, the depth of which depends to some extent on the strength of the current used and the type of electrodes, is produced at the end of every run of weld metal, and corresponds to a nick. A further nicking effect may be produced as a result of undercutting if the welding is not very carefully done. The report lays special stress on the necessity of great care in the execution of welding.

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### Mr. Gresley on Test Plant Conditions

In opening the discussion at the last session of the Institution of Locomotive Engineers on a paper by M. Pierre Place on locomotive testing plants, Mr. H. N. Gresley, then the President, referred particularly to the value of such equipment in facilitating strictly comparative tests before and after modifications to a locomotive or its equipment. He expressed the opinion that, as all the conditions are constant under the two tests, it is possible to assess with almost complete certainty the value of any new fitting which has been applied. Where a testing plant is not available and the engine is run on the road, each test may give widely varying results owing to differences of weather, speed and wind. The value of the testing plant is seen in the fact that these variables are eliminated. In the course of his paper the author stated that the tests repeated under identical conditions with several weeks interval, on the same locomotive, gave results which differed only very slightly, for example from 5 to 10 h.p. in relation to a total output of 1,500 h.p.

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### Locomotive Running Boards

There have been many cases, especially abroad, where the platform or running board surrounding the boiler of a locomotive has, for various reasons, been reduced in width to such an extent as to provide a very indifferent foothold for the enginemen. It is true, of course, that those in charge of locomotives are discouraged from and, indeed, seldom nowadays make use of this platform while the engine is in motion. However, in order to minimise the risks of so doing new regulations have recently been issued by the Canadian Board of Railway Commissioners respecting the dimensions of the running board of a locomotive and the conditions under which it is to be fixed. It must not normally be less than 10 in. wide and, if of metal, not less than  $\frac{3}{8}$  in. thick and properly supported. The width of the running board may be reduced to a minimum of 5½ in. should it be impossible, without extending the clearance allowance, to give the full width of 10 in. The running boards may be in sections where necessary, to provide for the location of air compressors, water pumps or heaters, reservoirs, or other appurtenances, and flat top steam chests may form a section of the running board if necessary. A covering must be placed over the top of the power reversing gear or similar devices located on or projecting through the running boards and all such covers must provide the minimum width described. Where the difference in elevation between one section and another is 20 in. or more an auxiliary step must be provided. Methods of fastening the running boards are the subject of further regulations, which are issued in the form of general order No. 534.



## Modified Schedules of Standard Charges

**A**LTHOUGH those clauses of the Railways Act, 1921, which provided for the fixation of standard charges for the purpose of enabling the companies to earn a certain standard revenue have, for a variety of reasons, proved a failure, the recent advertisement by the four main line railway companies of their application to the Railway Rates Tribunal for certain modifications of the schedules does not mean that the companies are seeking their general abolition. The application covers four subjects; the first and most important deals with the charges for the conveyance of small parcels (other than returned empties) by merchandise train; the second part relates to the conveyance of milk by passenger train or other similar service; while the third and fourth parts are concerned with the conveyance of merchandise and perishable traffic by passenger train. So far as the conveyance of small parcels by merchandise train is concerned, the Railway Rates Tribunal fixed a scale for parcels up to 3 cwt. which has operated since January 1, 1928. This scale occupies 28 closely printed pages, comprising no fewer than 5,685 entries. The amount of clerical work involved in connection with the conveyance of these small parcels is quite disproportionate with the revenue involved, and experience has shown that both the railway companies and traders have been put to unduly heavy costs in this respect.

After very detailed analyses, calculations and tests, the railway companies have succeeded in devising a scale which occupies one page only and reduces the number of entries from 5,685 to 690 by graduating the rates in multiples of 5s. and the weights in multiples of 14 lb. While this scale has also been compiled with the object of yielding as nearly as practicable the same amount of revenue as the existing scale, in practice it will probably be found that, taken over all, it represents a slight advantage to traders generally. Its most important feature, however, is the fact that its simplification should contribute materially to more accurate charging and rendering of accounts, with consequent reduction in unremunerative correspondence in railway companies' and traders' offices. So far as the conveyance of milk by passenger train is concerned, schedules of standard charges already exist for milk in cans, churns or butts; in bottles packed in cases; in cardboard containers packed in cardboard boxes; and in owners' tanks. Having regard to recent developments in the transport of this traffic, however, the companies now seek authority to introduce a fifth schedule covering the conveyance by passenger train or other similar service of milk in cardboard containers packed in wooden cases.

The third and fourth parts of the application relate to conveyance of perishable and other merchandise by passenger train. Whereas in the case of traffic conveyed by merchandise train, the standard scales of charges do not specify the descriptions of the merchandise concerned, but merely relate to the appropriate classes of the general railway classification, in the case of passenger train traffic the actual description of the merchandise is specified in the standard scales of charges. As a result, when applications are made to the Railway Rates Tribunal from time to time under the provisions of Section 28 (1) (a) of the Railways Act, 1921, for any alteration of the classification of any passenger train traffic, it also becomes necessary to make a formal application for a similar modification of the schedules of standard charges, which necessitates the publication of a Statutory Rule and Order. The railway companies propose, therefore, that the merchandise specified in the headings of the passenger train scales of standard charges should be deleted, a step which, it

approved by the Railway Rates Tribunal, will considerably simplify matters in that it will bring the passenger train procedure into line with that applicable to merchandise train traffic and render unnecessary the publication of these Statutory Rules and Orders modifying the standard charges on every occasion on which the classification is amended.

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## The World Speed Race

**P**ROGRESS in railway speed is today so extraordinarily rapid that it becomes increasingly difficult to keep pace with the changes in schedules which are taking place constantly in all parts of the world. A few years ago it was in France that accelerated services commanded the most attention; next came the revolutionary speed-up in Germany; and now it is the United States that takes the centre of the stage. Clearly American railroads are determined that diesel propulsion shall have no unchallenged supremacy, and the speed advances made in that country by steam are in some respects even more remarkable than those which have been effected by diesel-operated units. For the first time in the world's railway history, a run now appears in an American timetable scheduled at over 75 m.p.h. from start-to-stop, for which a steam locomotive of ordinary design is responsible. Twelve runs in the United States are now booked at over 70 m.p.h., and of these five are steam-hauled, seven diesel-operated, and an eighth worked by electricity.

The principal American speed achievements are focused on the Middle-West city of Chicago. We have referred previously to the services between Chicago, Milwaukee, St. Paul, and Minneapolis, which have produced such striking results, not merely in increased speed, but also in the reward of increased patronage. In various other directions from Chicago, favoured by the comparatively level country which surrounds that city, similar schedules are now being introduced with increasing frequency. It is on the Chicago-Detroit service that the latest world's record for scheduled steam haulage has been instituted; moreover, the run is accomplished by steam locomotives and trains of existing types, without any special streamlining or other preparations. The Pennsylvania and the Wabash Railroads have jointly accelerated the Detroit Arrow to make the run of 294.5 miles between Chicago and Detroit in 5 hr. 5 min. westbound and 5 hr. eastbound. As the Wabash route from Fort Wayne to Detroit is less suited to fast travelling than the Pennsylvania, some extraordinarily high speeds are now scheduled over Pennsylvania metals between Fort Wayne and Chicago. The westbound flyer is timed to make the run of 122.4 miles from Fort Wayne to Gary in 101 min., at 72.7 m.p.h. from start-to-stop; and in the eastbound direction there is the same overall timing, but with the addition of an intermediate stop at Plymouth. The latter makes it necessary to run the 58.2 miles from Gary to restarting from Plymouth in 50 min., followed by a time of 51 min. for the 64.2 miles from Plymouth to Fort Wayne.

The start-to-stop average of 75.5 m.p.h. so entailed is easily the fastest in the world for which steam is responsible; even from Gary to Fort Wayne, Plymouth stop included, the 72.7 m.p.h. demanded is well in advance of the 71.4 m.p.h. of this country's Cheltenham Flyer, which for long has held the steam speed record. This remarkable train is booked to maintain an average speed of just over 70 m.p.h. for two hours on end in each direction, the distance covered in exactly 120 min. being the 140.7 miles between Englewood and Fort Wayne, including one intermediate stop in the westbound and two in the



eastbound direction. As regards gradients, there is a rise of 217 ft. in altitude from Englewood to Warsaw (101 miles), followed by a slight fall from there to Fort Wayne, so that the inclinations are more or less negligible. Little capital is made by the Americans out of such timings as these, however, because in America—and, in principle, rightly so—the emphasis is laid upon the overall time of a complete journey, rather than on the high speed of one or more of its point-to-point timings. The fastest railway runs in the world, culminating in the 82.3 m.p.h. schedule from Berlin (Zoo) to Hanover of the Flying Cologner, are still made by the high-speed German diesel units, but it is clear from the American advances in speed that steam is hard on the heels of its newer rival.

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### The King's Langley Collision

THE student of the causes of railway accidents may be interested to know that up to the end of the year 1906 the serious collision at King's Langley on March 13 would not, except for the fact that a railway servant was unfortunately killed and another injured, have been necessarily reported to the Ministry of Transport, seeing that no passenger train was involved. The Act of 1871, on which most of the railway accident legislation is based, authorised the Board of Trade—now the Ministry of Transport—to call on the companies to report certain named classes of accidents. They were: (1) Any accident attended by loss of life or personal injury to any person whomsoever; (2) any collision where one of the trains is a passenger train; (3) any passenger train or part of a passenger train accidentally leaving the rails. Additionally to these there was to be reported "any accident of a kind not comprised in the foregoing descriptions, but which is of such a kind as to have caused or to be likely to cause loss of life or personal injury and which may be specified in that behalf by any Order to be made from time to time by the Board of Trade." Whilst the Board of Trade had these powers in 1871, it was not for another 35 years that it required to be reported "any collision between goods trains or between a goods train and a light engine, vehicle or buffer stops on running lines." That such a step as the reporting of collisions between goods trains was not taken earlier is rather a surprise, as any collision on a running line is an offence to be considered and to be avoided. One result of the Order of December 21, 1906, was that the 167 collisions between goods trains reported during the five years 1901-1905 had become 715 in the succeeding five years.

Coming first to the cause of the King's Langley collision, we would observe that Colonel Mount, in his report—the conclusions of which are recorded almost in full on a subsequent page—says, "the circumstances of this regrettable accident are simple and there is no doubt that it was brought about by negligence on the part of signalman Gibbs of King's Langley." Whilst we are inclined to agree with this—certainly as regards the circumstances being simple—we would like the case to be reconstructed so as to see if there were any extenuating circumstances that contributed to Gibbs's negligence. It is generally advisable, when criticising a man's action or inaction, to put oneself in his place. The time was round about 11 p.m.; the man had four running lines on one of the most important sections of main line in this country; over the up fast line three trains—a passenger train from Stafford, a meat train and a milk train—passed the signal box in the rear of King's Langley box between 10.53 and 11.8; a freight train passed King's Langley on the down slow at 11.7 and the 10.50 Aberdeen express from Euston on the down fast was accepted by King's Langley at 11.12. Further, there was

a coal train on the up slow for which no times are given; suffice it to say that it was passed by the milk train. That is a total of six trains in less than twenty minutes. It so happened that the three signalmen employed in King's Langley box had appealed for a reclassification of their box—for it to be Class 3 instead of Class 2—and a district relief signalman was there from 10 p.m. onwards to count up the "marks." He was doing this for the first hour when these train movements were being made, and Gibbs admits that he was discussing the matter with the relief signalman, and failed to notice that the meat train, which had to come to a stand in the section, had not passed. He then got confused between the passenger train from Stafford and the meat train and thus made the error so clearly described by Colonel Mount. The man had a clean record and when he had his doubts as to the actual situation he remarked to the reliefman that he would not allow anything to go towards the next box in the down direction until he had found out the position of affairs in the section. Towards that end he acted up to block telegraph rule 11 and, fortunately, stopped the Aberdeen express. He acted, however, too late to stop the down freight which had passed three minutes earlier.

Once again, then, there was a failure of the human agent, and the recent provision, related in the report, between Willesden Junction and Cheddington, of "the latest interlocking block equipment" had been defeated. Whilst this was the third occasion—possibly it may be found that Welwyn on June 15 last made the fourth—since the beginning of last year—the two others being Camden on January 1, 1934, and Winwick Junction on September 28—of serious accidents resulting from the *train on line* indication being irregularly cancelled, such an occurrence is decidedly rare. That fact becomes the more pronounced when we recall that there are 21,000 locomotives and 2,700 electrically-operated motor vehicles which run more than 400 million miles a year under the protection of 26,000 signalmen. Despite this density of traffic, such an irregularity as that which happened at King's Langley had not, until the mishap at Camden—for which one of the worst fogs on record was mainly responsible—caused a serious accident since that at Dinwoodie on October 25, 1928, and at Cefn viaduct on January 25 of the same year. The previous similar case in this country was in 1903.

The question naturally will be asked: Is there no safeguard against such a serious, if rare, irregularity as the improper cancellation of the *train on line* indication? There is such a remedy and it is to be found in lock-and-block. Many of the features of the lock-and-block system, or, as it is called in the present report, "interlocking, or closed, block working," are to be found in the area in question. The home signal has, for instance, to be proved at "danger" before *line clear* can be given; the track circuit in the rear of the home signal places and maintains the indication in the *train on line* position and the starting signal is released by the *line clear* indication from the box in advance and the signal lever must be put to normal and again released before it can be used for a following train. There is also electrical or mechanical sequential locking between the signals. Something more than that, it will be recognised, is necessary, *i.e.*, the actual passage of the trains must free the needle from its *train on line* position. That was done forty years ago, on the Great Eastern, for instance. Mr. Hollins, that company's Telegraph Engineer, told the Institution of Electrical Engineers, on January 28, 1897, that the G.E. directors, recognising the rapid growth of their enormous suburban traffic, and being determined to afford every protection that the combination of electrical and mechanical apparatus could give, to deal with this traffic safely and expeditiously, decided to adopt, at a cost

of little less than £25,000, the Sykes system over-practically the whole of their suburban lines. The feature we mention above as being necessary to avoid the irregular clearance of the *train on line* indication was part of the equipment, and the retention of the *train on line* indication was ensured until each train released it by the deflection of a rail contact as it passed out of the section. Those railway officers who did not encourage lock-and-block then disapproved of the rail contact in that it was depressed by the first wheel and at once rose again, and the instrument might thus be cleared when some of the train was still in the rear of the advanced signal. This objection was met, as on the London & South Western, by preventing the contact from rising again—and so clearing—until of the whole of the train had passed. That feature was discussed on page 61 of "Power Railway Signalling," since when track circuit has been made to supplement the rail contact. We would add that an essential complement to this arrangement is the co-operative cancellation of indicators, so that the man in the rear, for certain signals, and the man in advance for other signals must co-operate with the man who desires cancellation, in the emergency release of an instrument.

\* \* \* \*

### Principles of Railway Grouping in Great Britain

IN view of the tendency towards transport co-ordination which is being exhibited throughout the world, we frequently receive inquiries from overseas readers regarding the principles underlying the Railways Act of 1921. As this was passed through Parliament very shortly after

the war, it did not receive such full attention in the overseas press as has been accorded to subsequent transport enactments. The underlying principle of the railway grouping in Great Britain under the Act of 1921 was to merge into four large groups all the railways of national importance. This was done in every case by amalgamating complete entities which were dealt with on an exchange of stock basis. Prior to grouping there were many lines which were either owned or worked by joint committees of two or more railway companies, and often these joint committees were separately incorporated statutory bodies which could not be dissolved except by parliamentary action. Where all the partners in a joint line became absorbed into one of the group companies, naturally the joint committee and its properties thereupon came under one ownership. The Somerset and Dorset and many other lines, however, were controlled by partners who became members of different group companies, and in such cases the joint arrangements remained unaffected by grouping; any other course would have involved division of the property and valuation of the divided assets, a course which was not considered expedient. The grouping scheme did not affect lines of purely local interest, and therefore left untouched not only the Kent and East Sussex and other lines of this class, but also the whole of the London "Underground" group, the Metropolitan Railway, the Mersey Railway, and the Liverpool Overhead Railway (all of which carry heavy urban traffics), with their own separate problems which would not be alleviated by bringing them under the same ownership as the four large national railway groups. The London problem has, of course, now been met by the formation of the L.P.T.B.

## LETTERS TO THE EDITOR

*(The Editor is not responsible for the opinions of correspondents)*

### A New Field for Acceleration

56, St. Mary's Mansions,  
London, W.2,  
August 9

TO THE EDITOR OF THE RAILWAY GAZETTE

SIR,—Your references to new summer train services and accelerations prompt me to call attention to the curious reluctance shown by most British railways to depart from their old familiar schedules in the case of *new* trains, which are almost invariably light, and where the publicity value of a really fast timing would, presumably, be very great. An excellent example of this may be seen in the Swansea and Manchester trains instituted last July. These are widely advertised as "business" services, and do not run on Saturdays, yet they are timed, over the Great Western part of their route, at speeds little faster than those of the ordinary "North and West" expresses (which are very heavy trains in summer and, admittedly, hard to work punctually), and then occupy over 1½ hours for the 63 miles of L.M.S.R. territory between Shrewsbury and Manchester. Even if all the stops made by these new trains are necessary, both the standing and running time might surely have been curtailed, for a 5½ hours' journey from Swansea to Manchester, though an improvement on past services, is nothing to be proud of, even over a cross-country route, and these, I submit, are trains really suitable for acceleration, where a saving of time would be of great value.

The summer timetables supply many similar instances. The running, for example, of a new evening express at 5.10 from Euston to Lancashire seems an excellent opportunity to have advertised something much faster than 205 minutes over the easy 194 miles to Wigan (in which case it might

have been practicable to give, by the 5.10, the service to the Furness district and Carlisle now on the 4 p.m.), and such recent innovations as the 9 a.m. from Carlisle to Glasgow, or the new 9.15 a.m. Aberdeen to Glasgow and 7.15 p.m. return train, might surely have been distinguished by a timing faster than the ordinary and heavier services—particularly when the corresponding L.N.E.R. Aberdeen and Edinburgh trains, inaugurated last winter, were so treated.

Yet the L.N.E.R. timetable itself is not above criticism—witness the retention of a 48 minutes Newcastle to Darlington timing for the new 8.55 a.m. Newcastle to Liverpool last spring—and the Great Western Railway, though booking a new 10.15 from Paddington to Oxford in 65 instead of the usual 70 minutes, could not apparently give similar treatment to the new 5 p.m. from Bristol to Taunton, which still adheres to the usual 50 minutes schedule!

No one expects to see heavy holiday trains, often using intricate cross-country routes for part of their journey, booked at speeds which make punctuality impossible except under the most favourable conditions. But there would be no risk in the adoption of a fast schedule for such trains as those mentioned above, and when a new service has to be fitted into the timetable it is not, generally, a much more difficult task to find for it a "path" at high speed. Locomotive power is certainly not the obstacle to acceleration—witness the constant tightening up of heavily loaded expresses, and their fast start-to-stop timings over comparatively short distances, where little recovery margin is possible—and it would appear that many of these new trains are dropped automatically into old schedules, when they might easily have been used to satisfy the demand for acceleration.

Yours faithfully,

R. E. CHARLEWOOD

## PUBLICATIONS RECEIVED

**Statistical Year Book of the League of Nations, 1934-35.** Geneva: League of Nations Economic Intelligence Service. London: Allen and Unwin Limited, 40, Museum Street, W.C.1. 9½ in. × 7½ in. 314 pp. Price (paper covers), 10s. Cloth, 12s. 6d.—The revised tables appearing in this annual international synopsis of statistics relating to the most important demographic, economic, financial, and social phenomena, are supplemented in the latest edition by four new sections showing death rates by sex and age groups, international index numbers of unemployment, number of hours worked, and the production of beer. Among the main headings under which the contents of the volume are arranged are area and population, employment and wages, production and consumption, the transport industry, and currency statistics. Every effort is made to present accurate figures representative of the whole world.

**J. & E. Hall Limited, 1785 to 1935.** By Everard Hesketh. Glasgow: The University Press. 8½ in. × 5½ in. 58 pp. No price stated.—In the story of any industrial enterprise that has completed a full century and a half of activity—virtually the whole span of the modern industrial era—there is inevitably much not merely of interest, but also of inspiration. Often, however, this is not available to the present generation by reason of inadequate records, and the lack of an interested historian having available the skill and time necessary to carry out research and reconstruction work. The firm of J. & E. Hall is fortunate in having at the time of its sesquicentenary the happiest of historians in the person of Mr. Everard Hesketh, who has prepared the volume now before us. He joined the firm in 1878 and was a Director from 1879 to 1932, also occupying the Chair from 1880 to 1921. It was during the first decade of his chairmanship that the business was resuscitated after its equipment had been allowed to become obsolete during the closing years of the Hall family regime. Later generations of Hall appear to have lacked that keen business sense and enterprise which enabled the John Hall who founded this engineering works to couple his name with that of Dartford in the minds of many people throughout the world.

The original business was the conduct of a general foundry and engineering works, and it was in these that the famous Richard Trevithick served his last employment and carried out his final experiments. The Hall family link was severed in 1875, but the new proprietors carried on the traditions, and it is only within the last few years that specialisation has resulted in the firm's name becoming associated particularly with refrigeration. Hall's most recent connection with transport began in

1906, when the manufacture of heavy lorries under licence from the Swiss firm of Saurer was taken up. Shortly afterwards some of the earliest petrol-electric buses were built in collaboration with Tilling of London and Stevens of Maidstone, and were marketed under the name Hallford-Stevens. Petrol lorries continued to be a speciality until the last of over 3,000 left the works on April 1, 1926.

**Die Lokomotive Feiert mit das 100 jährige Bestehen der Deutschen Eisenbahnen.** (The Locomotive Joins in Celebrating the German Railway Centenary.) By Dr. E. Metzeltin of the German Engineers Association. Berlin, 1935: Published by the association through the V.D.I.-Verlag, G.m.b.H. 11½ in. × 8½ in. 88 pp. 177 illustrations. Price to non-members 3 RM.—The author is a leading authority on locomotive history and is already known to the world of railway literature by having originated the work issued by the former Hanomag Locomotive Works thirteen years ago, "The Locomotive in Art, Wit, and Caricature." He has taken advantage of the German railway centenary to produce the present volume which, while containing plenty of humour, possesses enough serious matter to make it informative as well. The author, with his son's assistance, has collected many interesting drawings, engravings, and photographs, including many cartoons published in the early days of railways and taken from journals of various nationalities, indicating the public attitude to the new system of transport. Memorable railway events, such as opening ceremonies and accidents, find appropriate illustrations, and among the information in serious vein is a section dealing with the part played by railways in the war of 1866. There is an interesting chronology of the locomotive, containing apposite commentaries from all sources relating to each date, and an amusing account of the celebrations held at the Borsig works when their 1,000th locomotive, the *Borussia*, was completed in 1858, with a picture of the procession that took place, symbolic of the progress of steam. There are many illustrations of railway curiosities, stamps, and paper money bearing railway designs, and among the extracts from foreign journals are several from *THE RAILWAY GAZETTE*. The locomotive, speaking on its own behalf at the beginning, says "When you have read about me in these pages do not rush past me in a hurry to get to the barrier after I have brought you safely and punctually to the end of a long and rapidly accomplished journey, but accord me instead a grateful glance; and my driver, too, who has so carefully guided me during my run." We trust that Herr Metzeltin's entertaining compilation will indeed induce a larger circle of travellers to comply with this

appeal. The publication is one more proof of the continued popularity of the railway, and especially of the steam locomotive, despite the existence of other now highly developed systems of transport.

**Power Transformers.**—This is the title given to a pamphlet (No. 91) which comes from Bruce Peebles & Co., Ltd., of Edinburgh. In the fore part the various components and general method of construction of transformers are described and illustrated in some detail, while the later pages are devoted to descriptions of the various different type of transformers manufactured by the firm. The examples described and illustrated are only typical, and attention is drawn to the fact that apparatus for every class of service can be supplied.

**Temperature Chart for Steels and Alloys.**—The Research Department of Hadfields Limited, East Hecla Works, Sheffield, has issued a temperature chart showing the wide range of conditions under which the various special steels supplied by the firm are suitable for use. The chart measures 16½ in. by 11 in. and shows a thermometer scale reading from absolute zero to 1300° C., with the appropriate steels, the Hadfields brands incorporating their properties, and the industrial purposes imposing the temperatures, boldly indicated alongside. It will be noticed that suitable grades of steels and alloys are supplied for conditions ranging almost the whole way between the extremes shown on the chart. Selection of materials for engineering purposes becomes more complex as scientific resources increase the number of qualities available, so that this very clear and durable chart will perform a valuable purpose in displaying the fruits of research.

**Railway Materials.**—The United Steel Companies Limited, Westbourne Road, Sheffield, sends a booklet dealing with the production and properties of certain railway materials, and illustrated with many excellent photographic reproductions. The major portion describes the wheels, tyres, and axles manufactured by the firms of Steel, Peech & Tozer, and Owen & Dyson Limited. The tyres are rolled in all sizes from 12 in. diameter up to the largest required for locomotives. They are made in tensile ranges from 42 to 80 tons, certain qualities being specially suitable for severe climatic and other conditions of operation. These products, as well as rolled steel disc wheel centres, solid wheels and straight axles of all kinds are produced by Steel, Peech & Tozer, being afterwards machined and assembled in the works of Owen & Dyson Limited, where scrupulous attention is paid to balancing. Steel, Peech & Tozer also manufactures locomotive crank axles, in which connection it is recorded that of 12 such axles supplied to an overseas railway in 1890 five are still in use while the average service obtained by May, 1934, was 920,000 miles.



## THE SCRAP HEAP

### G.W.R. CATERING CONSIDERATION

Mr. A. F. Gardiner, in a letter to *The Times*, says: "Intending to travel to Somerset recently by a morning train, I requested the refreshment department of the Great Western Railway to provide fish for my luncheon instead of the usual meat. This was done, and excellently cooked and served. Much to my astonishment I found that the company had also provided a supply for my return journey in the evening, thinking that I should probably be glad to have it."

When on Saturday, July 6, the Chichester-Midhurst line was closed to passenger traffic after the passing of the 7.14 p.m. ex-Chichester, a goodly number travelled down by the 6.1 p.m. ex-Pulborough and back by the 7.14 p.m., including Mr. Steve Bartlett, the late ganger on the Cocking length, who claims to have ridden down in one of the first trains on the branch. On the return journey was

also Mr. G. Batchelor, who was the first fireman on the first up train from Chichester in July, 1881, and who is still hale and hearty in spite of his years.—From the "*Southern Railway Magazine*."

### THE BRAKELESS "ROCKET"

Following an enquiry from "Perplexed Parent" addressed to the Editor of *The Evening News*, Mr. E. J. H. Lemon, a Vice President of the L.M.S.R., sent this interesting reply:—

"The question regarding the braking equipment of Stephenson's *Rocket* is of historical interest. Actually, this locomotive as originally built was not fitted with hand brakes either on engine or tender, and the driver was required to use his judgment in gauging the distance the engine would run with steam shut off before stopping. No doubt, however, judicious use was made of the reversing gear.

"On a print dated 1836 showing the

*Rocket* in its rebuilt condition, the tender is fitted with a brake, and by about 1840 it had become the general practice to fit tender brakes.

"Brakes on engines were not general until the adoption of the continuous brake, although some were fitted with steam brakes about 1870, i.e., before the introduction of the continuous brake."

The cantilever railway bridge spanning Dead Horse gulch, on the White Pass & Yukon Railway, is claimed by the U.S.A. press to be the world's most northerly bridge.

THE L.M.S.R. is displaying at various Clydeside stations crests of old railway paddle steamers. At Glasgow Central station a glass case has been set up containing the crest of the *Duchess of Hamilton*, which was lost during the war, and at Gourrock station there are two crests on display, namely, those of the *Marchioness of Lorne*, which was withdrawn from service 11 years ago, and of the *Caledonia*, which in 1933 ended 44 years of service.

## One Hundred Years Ago

Extracts from the August, 1835, issue of "*The Railway Magazine*" (afterwards "*Herapath's Railway Journal*") and the oldest constituent of  
THE RAILWAY GAZETTE

GREAT WESTERN RAILWAY BILL—House of Lords, June 10: The Bill for this undertaking was read a second time, after a division 46 for and 34 against it, majority 12. Lord Wharncliffe, on moving the second reading, is reported to have said: "Let their Lordships do what they would, communication would take place between all the ports of the country and London by means of railways."

In Belgium, the first portion of the chain of railways between Antwerp and the Rhine has been opened to the public. Hamburg, justly alarmed, is negotiating with Hanover on one bank of the Elbe, and with Prussia on the other, to secure a railway through one of those kingdoms into Saxony, Bavaria, and Bohemia, which will not merely advantage her present trade, but bids fair to divert to Hamburg the commerce of Trieste, for the supply of central Germany with colonial produce and manufactures.

France has tried the experiment successfully near Lyons; and the Government have publicly declared they will become partners in the lines now in progress from Paris to the coast. Even in Austria there are two very extensive lines of railroad at work.

It is, however, in the United States where the greatest impulse has been given to railways. Many hundred miles are already executed, and vastly more are in contemplation. In the small state of South Carolina, a railway of 150 miles, in one continued line,

is in actual operation. The whole population of that state is scarcely 300,000 souls; wages are 5s. a day, and capital at 7 per cent. interest; yet private enterprise chiefly has executed this great line, which is now, by its success, proving practically the truth of the principle long established in the minds of persons competent to judge, that railways create their own sources of revenue.

It seems incredible, that in Ireland, with a population of 8,000,000, multitudes of them in beggary, and too often in starvation from want of work, with wages at from fourpence to one shilling a day, and money at 4 per cent., one short railroad alone has yet been executed.—From a paper by C. Vignoles, Civil Engineer.

### THE LONDON AND BRIGHTON RAILWAY.

The Croydon Railway Bill received the Royal assent on Friday, June 12.

At the first general meeting of proprietors of the London and Croydon Railway, held at the company's office, No. 12, Angel-court, Throgmorton-street, on Thursday, July 16, the following resolutions (among others) were put and carried unanimously:—

"That this meeting having examined the plans of the intended continuation of the Croydon Railway from Croydon to Brighton, by way of Dorking, Horsham, and Shoreham, as recently surveyed under the direction of Mr. Gibbs, from which . . . it appears, that passengers by this line will be conveyed from London-bridge to Brighton com-

mencing by the Greenwich Railway; that the tunnelling will not exceed half a mile; that the ascending planes are not more than five miles and a half in the journey to Brighton and five miles in returning; that although the distance is somewhat greater, the passage will be performed in less time; and that the cost and difficulties heretofore apprehended in the departure of a line from London or its neighbourhood, will be surmounted and economized by the establishment of the Greenwich and Croydon Railways.

"That this meeting being fully impressed with the advantages which must result to the public at large, as well as to the shareholders, from the completion of a railway to Brighton, commencing from London-bridge, and on which the journey may be completed in less than two and a quarter hours, will promote the continuation of the line of railway from Croydon to Brighton as surveyed by Mr. Gibbs, and will also promote, by every means in their power, the subscription required to enable the Provisional Committee to apply to Parliament in the ensuing session, should they deem it advisable so to do."

The committee for the railroad from Cologne to the frontiers of Belgium have announced, by a notice of the 24th ult., that the whole sum of 1,800,000 dollars is subscribed, and the list closed. The Chamber of Commerce of Aix-la-Chapelle has given notice that the sum of 300,000 dollars, required for making the iron railroad pass by Aix-la-Chapelle, has been subscribed and that the lists are therefore closed.

## OVERSEAS RAILWAY AFFAIRS

(From our special correspondents)

## BRAZIL

## Paulista Railway Company

The annual general meeting of this company was held in São Paulo on June 25, and the following financial and statistical results for the year ended December 31, 1934, in comparison with those of the previous 12 months, were announced:—

	1933 Contos	1934 Contos
Gross receipts ... ..	93,729	107,481
Expenditure ... ..	53,849	58,021
Net receipts ... ..	39,880	49,460
Operating ratio, per cent.	57.45	53.98
Passengers carried, No.	3,268,435	3,825,604
Parcels, &c., carried, tons	70,619	85,158
Coffee carried ... ..	703,854	836,467
Other goods carried ..	1,499,350	1,674,981
Livestock carried, head	439,275	535,818

The net receipts for the past year rank amongst the highest ever earned by the Paulista Railway, exceeding those for the last pre-crisis year (1929) by 8,046 contos, and having only once since been surpassed, in 1932, when, largely in consequence of special payments for coffee retained in regulating warehouses, the figure reached 51,085 contos.

With the amount brought forward from the year 1933 (14,153 contos), the sum available for distribution was 63,613 contos. The principal outgoings against this credit were 26,975 contos in dividends and 20,817 contos in amortisation plus interest on foreign loans. Actually, 14,453 contos were carried forward to the current year's accounts.

## Paulista Funds

The position of the company's various funds at the end of 1934 was as follows:—

	Contos
Improvements and traffic expansion fund, built up out of revenue ...	25,059
Reserve fund (utilised partially for the purchase of Federal and São Paulo State bonds) ... ..	7,676
General renewal and improvements fund, for enlarging and rebuilding premises and adding to and replacing rolling stock, created by 10 per cent. increase on rates and fares (authorised by Decree No. 4,202 of March 10, 1927) ... ..	69,235
Afforestation fund (increased by 130 contos withdrawn from revenue in 1934) ... ..	7,138

The company's capital account on December 31, 1934, stood at 415,458 contos, compared with 418,810 contos at the end of 1933. The kilometrage operated by the company at the end of 1934 showed no change in comparison with the previous year, namely 1,466 km., of which 44 were double track.

In April, 1934, a project was submitted to the Government for the widening of the gauge (from 1 m. to 1.60 m.) between Itirapina and Baurú

viá Jahú; the work has already been finished as far as Jahú, but the remainder of the conversion has not yet been sanctioned. The Marília-Pompeia extension (30 km. in length) was opened in February, 1935.

## Rolling Stock

As regards rolling stock, the following was the position on December 31, 1934:—

	1.60 m.	1 m.	0.60 m.
Electric locomotives ...	45	—	—
Steam locomotives ...	77	86	11
Passenger coaches and vans ... ..	167	140	15
Goods and livestock vehicles ...	3,898	1,852	105
Service vehicles ...	185	16	—

On September 10, 1934, the contract between the Federal Government and the Improvements Association, constituted by the São Paulo State Government and the Paulista Railway Company for the execution of various improvements and renovations on the Estrada de Ferro Noroeste, received the sanction of the Accounts Tribunal. The Paulista entered with 75 per cent. of the capital necessary and the São Paulo Government with the remaining 25 per cent.; the original idea was that each party should enter with equal quotas.

## Courses for Railwaymen in São Paulo

The organisation which exists in the State of São Paulo for the training and selection of railwaymen has established seven instructional centres, in Campinas, Jundiahy, Sorocaba, Rio Claro, Baurú, Araraquara, and Bebedouro, where candidates can undergo a complete apprenticeship, and employees have a chance of perfecting their knowledge. In Sorocaba, Campinas and Rio Claro, the training shops, specially built for the purpose by the different railways (Paulista, Sorocabana and Mogyana), are already functioning, and those at the other four centres are in course of construction. A further instructional centre is projected for São Paulo, and is intended for present and future employees of the Cantareira Tramway and E.F. Campos do Jordão (a short electrified line connecting at Pindemonhangaba with the Rio—São Paulo line of the Central Railway). The organisation also hopes to obtain the support of the Central Railway, the São Paulo Railway and the Southern Minas section of the Rede Mineira, in which event, instructional centres will be installed at Lapa and Cruzeiro.

With its present facilities the organisation, which has a competent staff of instructors and travelling inspectors, can deal with 995 pupils, and an interesting feature of the scheme is the Psycho-technic Department, which, in collaboration with the Medical Inspection Department, concentrates on the

mental qualities of each pupil, with a view to selecting the right men for the right positions and, by means of classes in hygiene and physical training, ensuring a high standard of fitness in those ultimately chosen.

## NEW ZEALAND

## Solving the Rimutaka Incline Problem

The Rimutaka incline, described and illustrated in THE RAILWAY GAZETTE of January 4, has been worked since its inception by centre rail Fell engines. Now, however, the Government Railways Board has decided to introduce petrol-driven railcars on the Wellington-Rimutaka-Palmerston North route. Six railcars of the latest type and each seating 49 passengers are to be used on the service. They will have lavatory accommodation and can each carry one ton of small parcels and luggage. The power will be provided by a 130-h.p. Leyland petrol engine with torque converter, driving on to the rear pair of wheels. The cars are of the six-wheeled type, built for running in one direction only, with reverse gear for shunting *en route* and at terminals.

## A Fast, Comfortable Service

The construction of the cars is now in hand, and meantime suitable schedules of running are being worked out to give a fast comfortable service: there will be only one class and fares will be computed on existing second class rates. As these cars can travel at a rate of 50 to 60 m.p.h. on the level and will negotiate the Rimutaka incline—with a grade of about 1 in 15—fully loaded at a speed of from 15 to 17 m.p.h., considerable acceleration and a more frequent service will be possible. In fact, the time between Wellington and Masterton (66 miles) will be reduced from 3 hours 40 minutes to about 2 hours 15 minutes, and between Masterton and Palmerston North (66 miles), by through services, from some 3½ hours to about 2 hours.

## More Frequent Services

The tentative railcar schedule provides four passenger services in each direction between Masterton and Wellington (instead of the present two), and three in each direction between Masterton and Palmerston North (instead of the present two). These new factors are expected to change the whole aspect of travel on the line between Wellington and Palmerston North via the Wairarapa. The adhesion and braking power of the cars is such that no centre rail is required for their operation on the incline.

The time by railcar on six services in each direction between Wellington and Upper Hutt (20 miles) will average approximately 37 minutes, the best time being 32 minutes. The fastest present steam service is 48 minutes and the average time by rail is 59 minutes.

All these railcar services have been planned to give comfort, cleanliness,

frequency and speed. The accommodation on the railcars will be equal to the best of the present first class railway carriages. The new railcar service will also give much better connections between the Wairarapa district and the principal trains running to other parts of the North Island.

#### Railcar for Goods Services Adaptable to Carry School Children

A petrol-driven rail unit with a body designed for goods traffic will be run on a special schedule between Cross Creek (38 miles) and Woodville (115 miles from Wellington). This service will also convey about 20 school children to and from Masterton, for whom collapsible or removable seats will be provided.

#### Important Economy Factor

The whole of the costs in connection with the railcar and steam service which it replaces have been very carefully analysed and a saving of £1,500 per annum is shown in favour of railcar operation. Two main line engines will be released for service elsewhere. There will be no immediate saving in capital charges on the locomotives, but the use of railcars will ultimately have a strong influence on the locomotive construction programme and will substantially reduce the number of steam locomotives in service. The Fell engines are about due for replacement and with the introduction of petrol cars the number at present in use will probably be reduced by two or three.

## INDIA

### New Jhudo-Pithoro Line

The Senior Government Inspector of Railways, Circle No. 4, Lahore, has passed as fit for passenger traffic, the new 64-mile Jhudo-Pithoro branch of the Jodhpur-Hyderabad (Sind) Railway. This is one of the developments in connection with the great Lloyd (Sukkur) Barrage irrigation scheme, and is built to metre gauge in conformity with the parent line, the British section of the Jodhpur Railway. This section is in continuation of the Jodhpur state system and is worked by the Jodhpur Railway for the Government

of India; it terminates at Hyderabad (Sind) on the North Western Karachi-Lahore main line. About seven years ago there was a proposal to convert this section and its branches to broad gauge, so that they could be taken over by the Government of India and worked by the North Western administration, and a survey with this end in view was carried out about 1928-29. This scheme now appears to have been dropped.

#### Disaster in Railway Colliery

An explosion occurred on July 24 in the East Indian Railway Joktiabad colliery (Giridih) resulting in severe injuries to a large number of miners. They were immediately brought to the surface and removed by motor ambulance to the railway hospital. In addition to the railway medical staff, outside medical aid was promptly mobilised in order that the injured might not long remain unattended. A rest house was converted into a temporary hospital where the worst cases were treated. In spite of the efforts of the hospital staff, 53 of the 73 injured died. The members of East Indian Railway Local Advisory Committee expressed their sympathy for the bereaved, and injured miners. The Agent explained to the committee that, though the cause of the explosion was yet uncertain, it was conjectured to have been caused by the accidental ignition of liquid oxygen explosives. The Chief Inspector of Mines visited the colliery and conducted an investigation.

#### Burma Railways

According to the annual report of the Burma Railways, the gross earnings of the system increased in 1934-35 by Rs. 11,85,000, though the net earnings are still short of interest liabilities. An improvement in the price of paddy has assisted the earning power of the railway, and the possibility of development of the sugar and salt industries is indicative of the source of additional traffic.

The total traffic at Rangoon port during the year amounted to 1,742,235 tons, an increase of about 14.8 per cent. The total inward and outward goods earnings increased by 14.4 per cent. to Rs. 20,05,500. There has also

been a marked increase in passenger earnings in spite of road motor competition. The report concludes by saying:—"Whilst we are congratulating ourselves on the apparent lifting of the trade depression and visible advance in commodity prices, the disturbing news reaches us of some half-a-million acres of land under rice—in districts traversed by the railway—being relinquished by their owners as unprofitable to work at the prevailing prices of produce. This must seriously affect railway finances."

## KENYA & UGANDA

### Increased Traffic Movement

A remarkable all-round improvement in the traffics of the Kenya and Uganda Railways is reflected in the figures below, which relate to the first five months of 1935 as compared with the same period in 1934:—

	1934 Tons	1935 Tons	Increase per cent.
Total exports railed to coast ...	132,806	190,633	43.5
Total imports railed from Kilindini ...	35,403	40,641	14.8
Total public traffic dealt with on the system ...	335,661	390,354	16.3

The total train-mileage during the same five months increased by 18.2 per cent.

## SOUTH AUSTRALIA

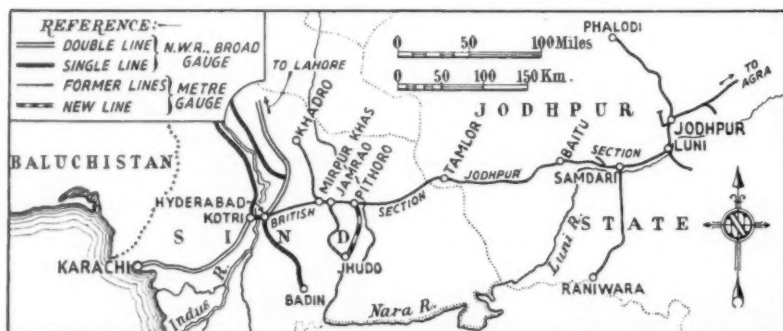
### Permanent Way Developments

The standard rail sections in use in South Australia at the present time weigh 60, 80, 90, and 100 lb. per yd. and base or bearing plates are used on all curves of 20-ch. radius and sharper. Recently electric arc welding has played an important part in track maintenance, being used for building up worn crossings, also fish plates, and for welding rail joints. On an average 15 crossings are being rebuilt up a week, and some 750 had been so treated as long as 16 months ago. Electric arc rail-joint welding has, as already mentioned in THE RAILWAY GAZETTE, been extensively used with satisfactory results on that system.

## FRANCE

### Rail and River Traffic Co-ordination

A decision of the Minister of Public Works, published in the *Journal Officiel* of August 8, approves the co-ordination agreement of July 26, 1934, between the P.L.M. Railway and the Comptoir de Rhône, representing the navigation companies of the River Rhone, after certain modifications have been made. No transporter, not a party to the agreement, has any right to utilise the River Rhone for transport between Lyons and Beaune. To obtain navigation rights he must apply for permission to sign a supplementary agreement accepting all the conditions.



Sketch map showing position of new Jhudo-Pithoro metre gauge branch line constructed in connection with the Lloyd Barrage, Sind



## THE TRANSPORT OF FOOD BY RAIL\*

### IV—Special facilities are provided by the British railways for conveying milk, cream and fruit over long distances under controlled conditions of temperature

By Sir HAROLD HARTLEY, C.B.E., M.C., F.R.S., Vice-President, London Midland and Scottish Railway

The fresh milk requirements of Greater London are estimated to be in the neighbourhood of 333,000 gallons a day, to supply which it is necessary to draw on producing areas as far distant as Scotland in the north and Devon and Cornwall in the west. In former days the supply was mainly maintained by a host of farmers sending separate consignments every evening to London, and even now considerable quantities of milk are despatched in this fashion.

The concentration depot system which has been developed in the producing areas by the large dairy firms has, however, greatly altered the railway problem of London's milk supply. Milk from farmers in one area is now collected and brought into a central depot where it is cleaned, pasteurised and cooled before loading in large tanks for despatch to London. These tanks—which have a capacity of from 2,000 to 3,000 gallons—are insulated, usually with about 2 in. of cork or Alfol, and lined with Staybrite steel or with glass. The milk is generally loaded into the tanks at a temperature of 38-39° F., and as the ratio of surface area to volume for a large vessel is relatively small and the journey is made overnight, insulation is sufficient to limit the rise of temperature to about 3° to 4° F. Thus, the temperature never rises above 45° F., at which level bacterial action is so slow that no serious deterioration takes place.

In this country, therefore, it is unnecessary to make provision for the refrigeration of milk in tanks; but in other parts of the world, where much higher temperatures and longer journeys are encountered, mechanical refrigeration has been applied.

#### Methods of Conveying Milk

From the point of view of the railway companies the use of large tanks is ideal for the conveyance of milk, as it reduces the number of vehicles on the trains and eliminates handling. For the purpose of catering for the traffic of dairies not situated in proximity to the railway, demountable tanks have been introduced, which are capable of travelling on their own wheels on the road and are mounted on a special chassis for rail conveyance.

Although the larger proportion of milk by rail is conveyed in tanks, there is still a large quantity despatched in churns, some of which is handed to us at temperatures of 35° to 45° F., and it is desirable to prevent any rise of temperature above 45° F. on the journey. During the winter when the night temperature is low ventilated vehicles suffice for this, but in the summer it is desirable to use a refrigerant. Experiments with insulated vans cooled by solid carbon dioxide showed that if the gas entered the van considerable quantities, up to 0.06 gm. per 100 c.c., were absorbed by the milk, increasing its acidity and affecting its flavour adversely by a loss of sweetness and a harshness to the palate.

Two new experimental vans have just been constructed for milk traffic with both ice and carbon dioxide bunkers,

in which the carbon dioxide is excluded from the van, being led by pipes into the insulation gap.

#### Fresh Cream in Churns

There is a considerable quantity of cream traffic in churns from the North of Ireland to London, but owing to the many transfers involved between an Irish creamery and a London dairy, difficulty was experienced in delivering it in a satisfactory condition during the summer. Thus, instead of showing a seasonal increase in the summer, the traffic actually decreased. The deterioration of the cream was due entirely to the high temperature which it reached, causing bacterial production of lactic acid. It was known that if the temperature was kept below 30° F. the action of bacteria would be so slow that there would be no appreciable change in the lactic acid concentration over the 16 hours required for the journey.

Experiments were made recently with comparable loads, as follow:—

- (a) *Conveyed by Ordinary Method.*
  - (i) By ordinary passenger train from the Irish station to Larne;
  - (ii) On the poop deck of the steamer to Stranraer;
  - (iii) By ordinary passenger train from Stranraer to Euston.
- (b) *By Experimental Refrigerated Method.*
  - (i) In a lightly insulated, metal-lined van on the Irish railway, water ice being packed round the churns;
  - (ii) On the deck of the steamer, covered by a wet sheet with ice packed round the churns;
  - (iii) In a passenger train van from Stranraer to Euston, with ice packed round the churns.
- (c) *Conveyed by Ordinary Method but Refrigerated by Eutectic Insert.*

The comparative temperatures of typical churns are shown below:—

TESTS ON THE CONVEYANCE OF CREAM FROM NORTHERN IRELAND.

Conditions under which conveyed	Cream temperatures in ° F. at:—			
	Irish creamery	Larne	Stranraer	Euston
Ordinary .. ..	38	45.5	48.5	48.5
Ordinary .. ..	38.5	46.0	48.0	46.5
Iced .. ..	38	41.5	42.0	39.0
Iced .. ..	38	40.5	42.0	39.0
Eutectic insert ..	38	38	—	39

From this table it will be seen that, apart from a slight rise in temperature on the boat between Larne and Stranraer, the "iced" service maintained the cream within the required temperature limit. The eutectic insert was entirely satisfactory, but it has the disadvantages already mentioned.

#### Soft Fruit

The carriage of strawberries from Cambridgeshire to the canning factories in the fruit growing areas of the West Midlands is a good example of the way in which new facilities may create an entirely new traffic. Strawberries for canning are required to be in perfect condition, dry, firm and free from mould, and with the ordinary method of transport in ventilated vans the condition could not be relied on after a journey of more than 25 miles. Last summer, experiments were carried out in

\* A paper presented to the Society of Chemical Industry annual meeting at Glasgow, on July 3.

the carriage of strawberries from Wisbech to Gloucestershire in insulated vehicles, employing solid carbon dioxide as refrigerant. The fruit coming in from the fields had no precooling, and was handed to the railway company at relatively high temperatures (60° to 80° F.). The object of the experiments was to determine the amount of cooling required to give satisfactory conveyance overnight. Examples of the results are shown herewith:—

TESTS ON THE CONVEYANCE OF FRESHLY GATHERED STRAWBERRIES :  
LOADED AT 4.30 P.M., UNLOADED 9.0 A.M. NEXT DAY

Vehicle	Insulation	Net load, cwt.	Weight of solid CO <sub>2</sub> lb.	Temperatures in ° F.			
				Air on loading	Fruit on loading	Fruit on unloading	Air on unloading
E. container	6-in. Alfol	16½	125	81	68.5	58.5	66
F. container	2-in. Alfol	33	300	83	75.5	56.0	71

Records taken at the canning factory showed that the total quantity of fruit arriving in a condition unsuitable for canning was only 10 per cent., which was the recognised allowable wastage in the case of locally grown fruit. It was concluded, therefore, that the satisfactory conveyance of strawberries overnight could be achieved by this method. New containers have been constructed capable of carrying 40 cwt. of fruit with solid carbon dioxide bunkers of 400 lb. capacity, and the tests are continuing during the present fruit season. The danger of deterioration of the fruit due to contact with carbon dioxide gas has been prevented by excluding the gas from the container. It should be noted, however, that on one occasion there was a considerable leakage of gas into the vehicle, but subsequent examination of the fruit some months after canning showed it had suffered no ill effects.

Similar tests were made in the conveyance of raspberries from the Perthshire area of Scotland to a Lancashire canning factory. The results obtained at the outset were not so satisfactory as with strawberries owing to the difficulty of finding a satisfactory method of storage of the fruit. An improved method, however, has now been devised in which the chips of raspberries are carried in metal trays specially designed for stacking, and this will be tried during the coming fruit season.

#### Other Foodstuffs carried under Controlled Conditions

**Ice Cream.**—The transport of small consignments of ice cream is probably the most striking example of the development of a low temperature traffic due to speed. In recent years this traffic has grown rapidly and now several thousand tons per annum are sent by rail from London to destinations all over the country. The ice cream is conveyed at temperatures below 10°F. in small insulated boxes with a small quantity of solid carbon dioxide to neutralize the heat leakage through the walls. This traffic is carried on express passenger trains and requires most careful organisation. Its success depends on the reliability and speed of delivery and is a good test of the service by the British railways.

**Bananas.**—All the preceding examples illustrating transport under controlled conditions have been selected from foodstuffs requiring low temperatures. An interesting example of the converse is furnished by the rail transport of bananas, which require to be heated in cold weather. The magnitude of this traffic can be judged by the figures for 1933, in which year nearly 16 million whole bunches of bananas were loaded at four ports in this country, and distributed by rail. As the fruit is brought by passenger and mail ships, which require a very quick "turn-round,"

arrangements have been made for discharging, by means of conveyor belts, direct into a slowly moving train of railway banana vans.

Bananas brought from overseas under refrigerated conditions and landed green, are ripened during the rail journey and in the few days before they are sold. This process is carried out in vans insulated with 2 in. of cork and fitted with heating pipes fed in the same manner as carriage heating equipment from the locomotive boiler. The temperature and air changes are controlled by means of adjustable shutters in the walls of the van, by means of which the rate of ventilation can be varied. There is no call for very great accuracy of control since the final stages of ripening are always carried out in special stores under expert supervision, and the service provided by the railway company is mainly with the object of shortening the final storage period. The maximum temperature attained in these vans is about 90°F.

Although the main object of this paper has been to show the part the railways are taking in the development of refrigerated transport, the essential part they play in food transport as a whole must not be forgotten. For while in other industries the scientific control of factory conditions enables production to be placed in its logical position with regard to raw materials or centres of consumption, thus reducing transport, in agriculture local advantages of soil and climate still determine the areas in which production is cheapest or in some cases where alone it is possible, and modern transport enables the consumer to take advantage of all the variety of diet that Nature has to offer.

Not only do the railways play an indispensable part in supplying the food demands of the world in normal times, but in emergencies they are invaluable in distributing food to areas where there may be a threatened shortage. However, the recent developments of which I have spoken seem to me to have a much deeper significance than the varied attractions which they offer to the cultured palates of the present generation. Nobody to my knowledge has yet made an estimate of the cost to a nation of the avoidable incidence of invalidism, but it must be huge, and there is a growing feeling that of the various causes of this source of waste and suffering, under-nutrition is by far the greatest. And what are the foods that are necessary to bring the average diet in this country to a standard that is sufficient to sustain full health and efficiency? The answer I suggest is more milk, more fresh fruit and vegetables, more dairy produce, more fish and for many, more meat—the very foodstuffs in fact which refrigerated transport by rail and sea has been designed to carry.

**LONDON SUBURBAN ELECTRIFICATION RESULTS.**—The London East Division of the Southern Railway has completed a decade of electric traction, if the Central Section at London Bridge be excluded. The lines from Victoria and Holborn to Orpington via Herne Hill and the Catford Loop and to Crystal Palace (High Level) were opened for electric traction on Sunday, July 12, 1925, and an examination of the results is interesting, as the following figures, chosen at random and published in the *Southern Railway Magazine*, show:—

Station	1925		1934	
	No. of pass. tickets issued	No. of season tickets issued	No. of pass. tickets issued	No. of season tickets issued
Beckenham Junction ..	277,338	5,345	394,808	14,680
Lordship Lane ..	30,043	870	57,019	1,742
Crofton Park ..	242,115	5,019	338,753	7,115
Bellingham ..	164,025	2,727	313,743	4,832
Ravensbourne ..	9,151	145	24,887	822
Pett's Wood (new station in Orpington district)	—	—	320,597	13,049
Orpington ..	272,060	2,677	403,451	13,378

## IMPROVING LOCOMOTIVE BOILER EFFICIENCY

*The Nicholson Thermic Syphon ensures greatly improved water circulation and economy of fuel in locomotive boilers*

FROM its inception the orthodox type of locomotive boiler has proved to be the most efficient and satisfactory form of steam producer that it is practicable to incorporate in the conventional locomotive. In its design, however, there are inherent shortcomings, and one

tive circulation can readily be verified by placing the hand along the lower part of the firebox and the underside of the boiler barrel, when it will be observed that these parts are comparatively cool, although the boiler may have a full head of steam.

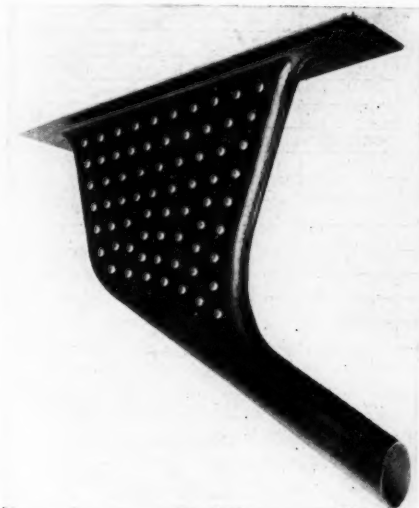


Fig. 1—Nicholson Thermic Syphon

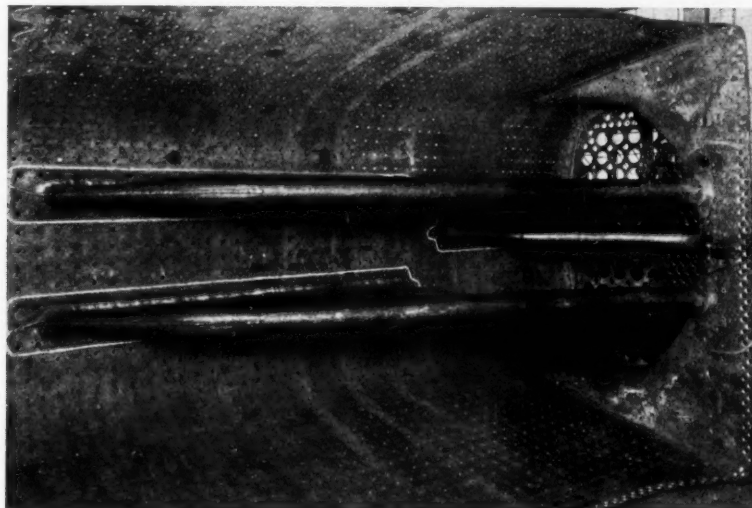


Fig. 3—View in firebox fitted with three Thermic Syphons; two in firebox, one in combustion chamber

that stands out prominently is the comparatively inefficient circulation of the water, particularly round the firebox water space and along the lower part of the barrel of the boiler. It is from here that many of the troubles experienced with cracked firebox plates, broken stays, and accumulation of dirt and scale can be traced. This defec-

From time to time, numerous devices have been introduced with a view to overcoming the difficulty, but have met with only moderate success, and it was only with the more recent introduction of an appliance known as the Nicholson Thermic Syphon that many of the troubles referred to have been eliminated. As will be seen from

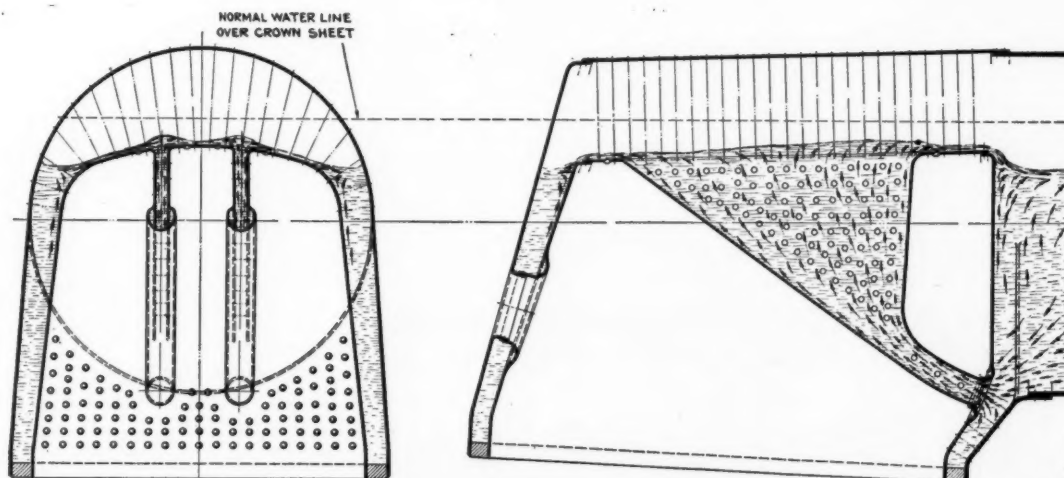


Fig. 2—Sections through firebox showing effect on water circulation produced by Thermic Syphons



Fig. 1, the thermic syphon is a water leg, triangular in form, having a suitable flange at the top for attachment to the roof of the firebox, and its lower portion ending in a circular neck that is secured to the lower part of the firebox tube plate. The triangular portion is flat on its sides and is stayed with hollow steel staybolts.

The syphon is constructed in one plate of special quality firebox steel and is electrically welded throughout. Being placed in the centre of the firebox, and hence in the hottest zone, it is subjected to the greatest heat, and thereby adds a considerable amount, averaging about 25 sq. ft. of valuable heating surface to the firebox. By its presence it creates a syphonic action in the water and so promotes very active circulation in that part of the boiler where, in ordinary circumstances, little or no circulation exists.

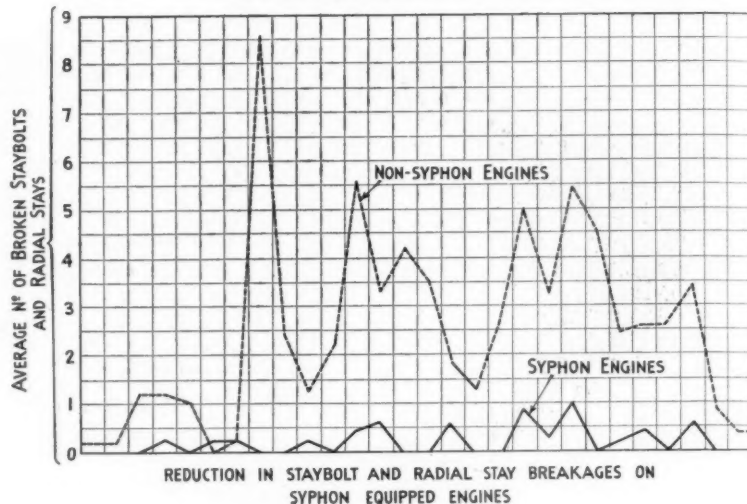
Not only does the syphon function as a circulator, but it also forms a very substantial stay, or reinforcement, to the crown of the firebox, and it can be reliably stated that in no cases where shortage of water has occurred with syphon-fitted boilers has the firebox crown collapsed (see Fig. 2). Another feature of the syphon is that it provides an excellent support for the brick arch, and it has been found that arches last very much longer when supported by syphons than is the case when other means are adopted. Furthermore, due to the very active circulation promoted by the syphon, the lodgment of scale and dirt in the boiler is greatly minimised, while the raising of steam from cold is considerably accelerated. So far as fuel economy is concerned, it has been ascertained from careful tests made with some hundreds of locomotives that a saving of at least eight per cent. in fuel is obtained; this saving, too, is quite apart from that resulting from the increased life of the firebox and freedom from many of the troubles otherwise experienced (see Fig. 4).

With boilers of moderate size, it is usual to fit one syphon in the firebox, but with larger types having a wide firebox, two are installed and in the case of very large locomotives, such as those operating in the United States, as many as three syphons are fitted, two in the firebox itself and one in the combustion chamber (see Fig. 3). In some cases, as many as five are installed. There are many instances where, owing to greater demands upon locomotive performance, the boilers have been found unable to meet the call made upon them, but with the ad-

dition of thermic syphons in the firebox, the desired improvement in boiler capacity has been effected. In view of the many advantageous features incorporated in the thermic syphon, it is not surprising that they have now been adopted by no fewer than 160 railways throughout the world, involving the application of over 14,000 thermic syphons, and would thus appear to be firmly established as one of those fittings that contributes to the much desired increased efficiency and life of the locomotive boiler.

1925													1926												1927											
	FEB.	MAR.	APR.	MAY	JUNE	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.	JAN.	FEB.	MAR.	APR.	MAY	JUNE	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.	JAN.	FEB.	MAR.	APR.	MAY								
NON-SYPHON ENGINES	1	1	1	2	2	-	-	-	6	1	1	7	4	5	7	3	-	5	3	4	7	-	1	4	5	6	-	2								
	2													3	6	-	-	-	3	3	10	15	-	3	-	3	-	-								
	3				2	-	-	1	-	-	-	-	-	2	1	-	3	15	5	3	3	-	1	5	-	-	-									
	4				4	1	-	-	5	5	10	20	9	9	-	1	5	1	4	4	2	11	5	3	5	4	-									
	5			4	-	-	-	1	42	1	-	-	1	-	7	2	4	1	4	3	-	3	3	-	-	-	3	-								
TOTAL	1	1	6	6	5	-	1	43	12	6	11	28	16	21	17	9	6	13	25	16	27	23	12	13	13	17	4	2								
AVER <sup>9</sup>	2.2	2.2	1.2	1.2	1	-	2	86	2.4	1.2	2.2	5.6	3.2	4.2	3.4	1.8	1.2	2.6	5.3	2.5	4.4	4.6	2.4	2.6	2.6	3.4	1.8	1.4								
IN ADDITION TO BREAKAGES RECORDED ABOVE, ALL NON-SYPHON ENGINES HAD A COMPLETE RENEWAL OF STAYBOLTS AND RADIAL STAYS																																				

IN ADDITION TO BREAKAGES RECORDED ABOVE, ALL NON-SYPHON ENGINES HAD A COMPLETE RENEWAL OF STAYBOLTS AND RADIAL STAYS



SYPHON ENGINES	1925												1926												1927															
	FEB.	MAR.	APR.	MAY	JUNE	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.	JAN.	FEB.	MAR.	APR.	MAY	JUNE	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.	JAN.	FEB.	MAR.	APR.	MAY	JUNE	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.	JAN.	FEB.	MAR.	APR.	MAY
6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
7	-	-	-	1	-	-	1	-	-	-	1	-	-	-	-	3	-	-	-	1	-	-	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
8	-	-	-	-	-	-	-	-	-	-	-	-	3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
9	-	-	-	-	1	-	-	-	-	-	-	2	-	-	-	-	-	4	-	1	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
TOTAL	-	-	-	1	1	1	-	-	-	-	1	-	2	3	-	3	-	4	1	5	-	4	-	1	2	-	3	-	-	-	-	-	-	-	-	-	-	-	-	-
AVER <sup>9</sup>	-	-	-	.2	.2	.2	-	-	-	.2	-	.4	.6	-	-	.6	-	.8	.2	1.0	-	.2	.4	-	.6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Fig. 4—Chart showing comparative staybolt breakages with syphon and non-syphon locomotives



An event of the German railway centenary is the issue of four new 6, 12, 25, and 40 pfennig postage stamps, depicting respectively, "Der Adler," a modern "conventional" steam locomotive, a high-speed diesel railcar, and a streamlined steam locomotive

## THE AIR-CONDITIONING OF TRAINS—V

### *Developments in Great Britain*

By STUART MIALL, B.Sc.

IN the United States, and in many parts of the British Empire, excessively high summer temperatures are experienced with great regularity every year, and the period of discomfort extends over some months. In the British Isles uncomfortably hot spells lasting a few days or weeks are sometimes experienced, but they are not a feature of every summer, and they are seldom so disagreeable as to call for the use of ice-chilled or machine-cooled air. Comfort to the occupants of an enclosed space such as a railway carriage can nearly always be assured in summer weather by merely keeping the air in a state of gentle motion while at the same time preventing its moisture content and temperature from progressively increasing as a result of the exhalations of human bodies and cooked food. Such increases can be avoided by the very simple expedient of changing the air in the enclosure before its condition has been appreciably altered. New air can be introduced continuously by fans, and where this is done through suitable openings there need not be any fear of unpleasant draughts.

In a railway carriage with forced ventilation the air breathed by passengers is almost identical chemically and physically with the free air outside, and it has the advantage over the outside air of being in motion. On those days which are regarded as being uncomfortably hot, the atmospheric air is usually very sluggish in its movements, and it clings around any perspiring and unhappy person who happens to be seated, long after it has become humid and near to blood heat.

In the absence of any arrangements for cooling the air in a carriage it is unnecessary to de-humidify and recirculate any portion of the air extracted. On air-conditioned trains in America, from 75 to 100 per cent. of the air extracted must be returned for reasons of economy; it possesses a residual coldness representing an expenditure of energy and money, and this coldness could be imparted to entirely fresh air only by using impossibly bulky heat exchangers.

Recirculated air is necessarily deficient in oxygen and charged with impurities such as carbon dioxide, unless some special ozonising device is incorporated and it is a distinct advantage therefore to be able to admit nothing but fresh atmospheric air. In this country conditions are generally such as to permit this. Moreover, the habits of the people seem to necessitate it, for since tobacco smoking goes on in these islands regardless of time, place, and even prohibitions, the American plan of recirculating air might quickly show itself to be impracticable. In this event, unless it was restricted to only one or two special carriages such as diners, Pullmans, or sleepers, artificial cooling would also show itself to be impracticable in Great Britain, for without recirculation the amount of cooling necessary would entail the use of extremely large quantities of ice, or of refrigerating machines taking a prohibitive amount of power.

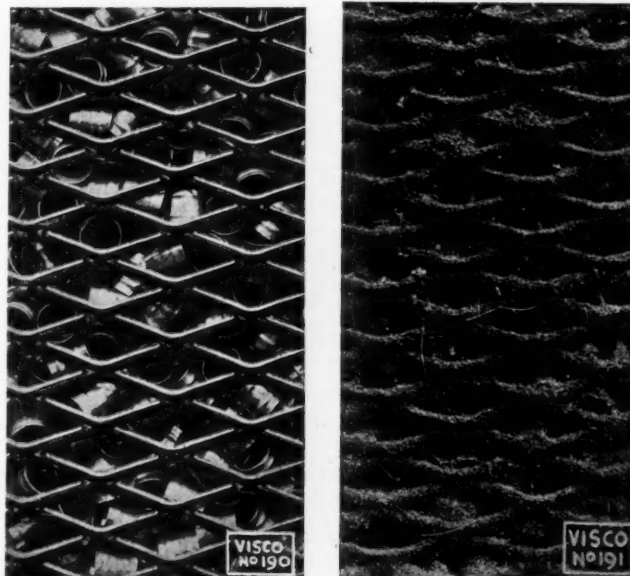
Systems providing for the introduction of fresh air only have got long past the experimental stage, and they are already in common use on the railways of temperate regions. They are simpler than systems involving the use of refrigerants, but they

call for about four times the filter capacity of systems based on a 75 per cent. recirculation, since four times as much fresh air will be admitted for a given rate of circulation through the car. Rather more steam is required for heating purposes in winter where the air passes through the car once only, but the loss which this entails is unavoidable, and it may be regarded as a part of the price of satisfactory ventilation.

#### Stone's Pressure Ventilating and Heating System

When due consideration is given to the conditions obtaining in this country, conditions which have been briefly described above—it will be appreciated that the pressure ventilating and heating system developed for railway carriages by J. Stone & Co. Ltd. of Deptford, goes a long way towards providing what is necessary and economically practicable for passenger comfort in a land of uncertain but on the whole reasonably temperate climate. Its working bears scientific scrutiny and its simplicity makes plain the fact that, from the first, railway requirements, as well as passenger requirements, have received careful and expert consideration.

The Stone system provides for the admission to the carriage of nothing but outside air which is filtered twice, once in a hair filter, to rid it of the relatively large foreign bodies, and again in a Visco filter to remove fine dust. The air is drawn through the filters, and through a "spiral-fin" tubular heater, by an electrically driven fan, and it is introduced via ducts into the carriage at floor level. The temperature of the air is varied by varying the volume passing through the heater while keeping the total volume delivered by the fan at a constant figure. To meet this condition a passage is provided between the



The Visco air filter: (Left)—Chaotic arrangement of metal rings newly covered with viscous film by dipping in oil bath; (Right)—Same assembly after being used to filter dust-laden air

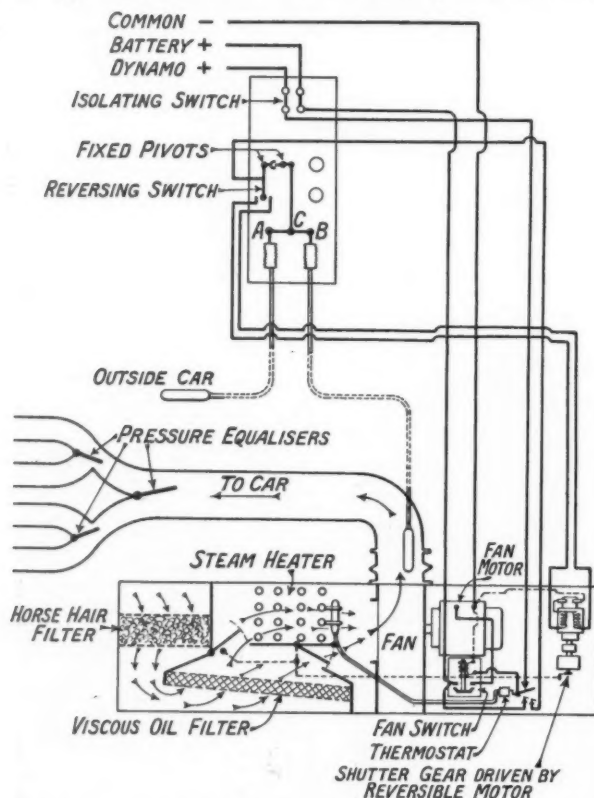
filter and the fan which by-passes the heater, and hinged shutters, provided in the direct and indirect air passages, are automatically adjusted to divide the air stream in the correct proportions. The air enters the carriage through nozzles of equal size, and, to ensure the same discharge from each, it is necessary to see that the pressure in the ducting is everywhere the same, namely about 0.3 in. water-gauge. Adjustable flaps are provided wherever the ducting divides into two branches, and the desired result is obtained by setting these in appropriate positions.

The ducts themselves are of metal and are lagged with a moth-proof material. Their disposition varies according to the layout of the carriage body, but their cross-section is relatively small and this can be shaped to suit the interior angles of the carriage.

On ejection into the carriage interior the fresh air, warmed or unwarmed, rises and displaces the less pure air towards the roof, where extraction type ventilators are able to carry it away. The path of the smoke from pipe, cigarette, or cigar is upwards, with other impurities, and individuals who prefer to breathe uncontaminated air are therefore able to do so where this particular system of ventilation is used.

### Temperature Control

The carriage temperature is maintained constant at 65° F., or thereabouts, under winter conditions when steam is supplied to the heater. This constancy is secured by



Diagrammatic drawing of Stone's apparatus for ventilating and heating railway carriages

automatic means, a greater proportion of the air drawn in by the fan being allowed to pass through the heater when there is a fall in the outside temperature. The proportion is not so altered as to ensure a constant fan delivery temperature irrespective of the temperature of the atmospheric air. It is altered to give a rising fan

delivery temperature, for, on colder days, the air must be delivered somewhat warmer if the carriage temperature is to be maintained at 65° in the face of increased heat losses.

With any given carriage a definite relation will subsist between the outside air temperature and the temperature which should prevail at the fan outlet. The correct relation is ensured in the Stone system by the use of two thermostats working in conjunction with a small reversible electric motor coupled through reduction gearing to the two shutters governing the proportion of heated or unheated air. One thermostat A has its bulb in the outside air, while the other B has its bulb in the fan outlet. Both thermostats respond to a fall of temperature in the same way, namely, by lowering the ends of a horizontal lever supported between them. An intermediate point C in this lever is connected to a two-way switch, so that if either the atmospheric temperature or the temperature at the fan outlet falls, the shutter-operating motor is set in motion in such a direction as to send more air through the heater. The ensuing rise in fan delivery temperature causes the thermostat B to lift its end of the horizontal lever and to a lesser degree point C, and this elevation of C continues until the two-way switch is returned to its neutral position when the shutter-operating motor ceases to rotate.

The distance of point C from A or B can be adjusted so that when there is a fall in the outside temperature which lowers A and C, the compensating rise of B (needed to restore C and its switch to the neutral position) will be occasioned by a rise in the fan delivery temperature which is neither greater nor smaller than it should be. What the correct rise is will depend on the design of the carriage, and it is for the reason that carriages differ in their heat dissipation characteristics that the distance AC is made adjustable.

The raising of point C, due to a rise in the outside temperature, throws the two-way switch over on the side corresponding to reverse operation of the shutter-operating motor. Less and less air passes through the heater and eventually thermostat B, responding to a lower fan delivery temperature, returns the switch to its neutral position, and so puts a limit on the fall affecting it. It will be apparent that changes in the steam supply or in the steam temperature will be prevented from disturbing the carriage temperature in precisely the same way that changes in the outside temperature are prevented from disturbing it.

A third thermostat is incorporated in the Stone apparatus, this having its bulb in contact with the heater elements and serving to alter the connections in summer when the steam supply is cut off. Cooling the bulb of this thermostat by shutting off the steam causes the reversible shutter-operating motor and its controlling thermostats to be cut off from the battery positive. It also puts the coil of the electro-magnetically closed fan switch across the dynamo instead of across the battery, thus rendering the fan inoperative unless the train is moving in excess of the speed at which this dynamo cuts in.

**RAILWAY CONCESSION TO COMMERCIAL TRAVELLERS.**—In response to a request from the annual conference of the United Commercial Travellers Association of Great Britain and Ireland, the British railway companies have agreed to make the commercial traveller's week-end ticket available for break of journey on the homeward as well as the outward route. This concession will be of great advantage to commercial travellers going home to their families for the week-end, as it will, in very many cases, enable them to make extra business calls on the way home. The new facility comes into operation at once.



## NEW STEEL-COVERED CORRIDOR TRAIN, GREAT SOUTHERN RAILWAYS, IRELAND

*This train is now running on the Dublin and Cork day mail service*

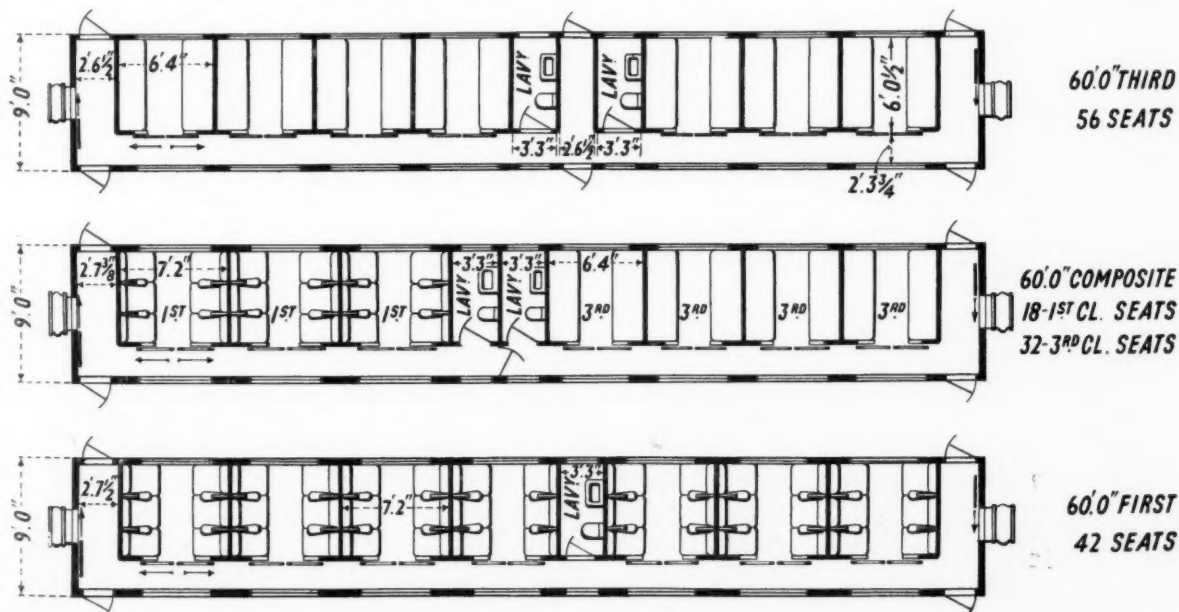


*The new train on the Dublin-Cork service headed by locomotive No. 403*

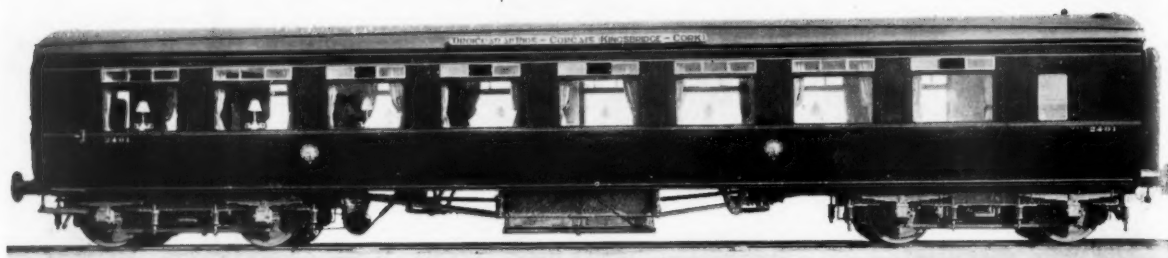
A NEW steel-covered corridor train has recently been built at the works of the Great Southern Railways at Inchicore, Dublin, and is now in use between Dun Laoghaire pier and Cork. It consists of a travelling post office, three third class coaches, one composite, and one first class coach, two dining cars and a luggage van. A portion of the train, consisting of the two dining cars, the composite coach and the sorting van plies between Kingsbridge and Cork only, but the passengers travel from and to Dun Laoghaire pier without change in Dublin. The new coaches incorporated in the train are

of the most modern design, embracing all the latest improvements for the comfort of passengers.

Each vehicle is 60 ft. long and mounted on two four-wheeled bogies of improved design, special consideration having been given to the suspension and springing arrangements. The body, which is carried upon an all-steel underframe, has a sheet steel roof, ends and sides, the latter being flush for the entire length of the coach. The framing of the body is of teak. Accommodation is provided for first and third class passengers, and access to the compartments from the side corridor is by sliding



*General arrangement of new passenger rolling stock*



*New steel-covered corridor dining car for service between Cork and Kingsbridge station, Dublin*

doors arranged in conjunction with large sidelights in the corridor, enabling passengers to have an uninterrupted outlook.

Two colour schemes have been adopted for the first class compartments, namely, heather and beige and green and grey, with sepia toned photographs and oval frameless mirrors. The corridors are finished in two colours, *i.e.*, green and gold, and the ceilings in ivory white. The floors are of green Sorbo sponge rubber with green and black border rugs. Sorbo sponge rubber and Dunlopillo cushioning are used in the carriage upholstery. The upholstery of the third class compartments is maroon, with biscuit coloured panelling, sepia toned photographs and framed mirrors, the floors being of red and black rubber. The ceilings are finished in pale buff and the corridors in brown and biscuit colour. The timber finish throughout the first and third class coaches is polished mahogany, and all fittings internal and external are chromium plated.

In addition to the new coaches already referred to, two dining cars, one of which is provided with a kitchen, and a travelling post office, double-net van, have been reconstructed to the same external design as the new coaches, having exterior panels of steel. The interior arrangements of the dining cars embrace many improvements, including the re-modelling of seats and tables, the latter being provided with combined electric lamp stand and bottle holder, complete re-upholstering, large sidelights fitted with sliding shutter ventilators and old gold silk curtains.

The colour scheme in general is green and beige shaded off to pale cream; Sorbo rubber tiled flooring with sponge rubber centre runners completes the finish; all internal and external fittings are also chromium plated. The kitchen and pantries have been re-designed and a cocktail bar is provided in the non-kitchen car.

The first series of these coaches, comprising one first class, one first and third composite, three third class, together with two diners, one post office van and luggage van, went into service on the day mail between Dublin and Cork, giving a through connection to Dun Laoghaire in both directions on Monday, August 5. Further car-

riages of similar design are under construction at Inchicore. The exterior of the train is painted in the company's standard colours, crimson lake with black and yellow horizontal lines.

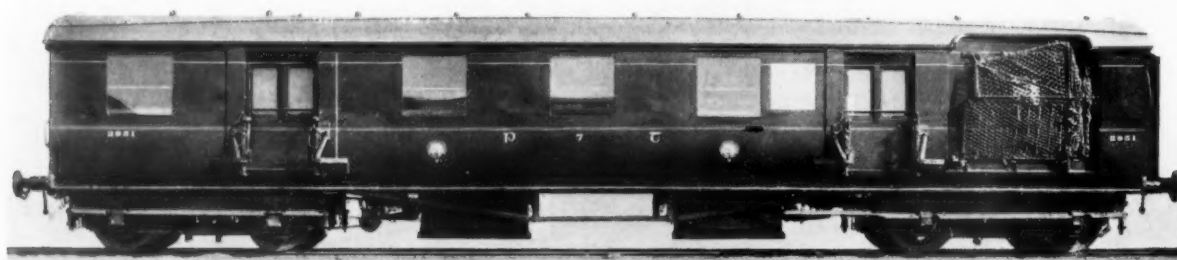
The principal dimensions of the new carriages are as follow:—

Length over body .. .. .	60 ft. 0 in.
Width " outside .. .. .	9 ft. 0 in.
Length over buffers .. .. .	64 ft. 0 in.
" underframe .. .. .	59 ft. 11 in.
Centres of bogies .. .. .	44 ft. 0 in.
Wheelbase of bogies .. .. .	9 ft. 0 in.
Journals " .. .. .	9 in. x 5 in.
Seats—first class .. .. .	42
" third class .. .. .	56
Composite—first class .. .. .	18
" third class .. .. .	32
Tare weight .. .. .	30 tons

The directors of the Great Southern Railways invited a number of guests to accompany them and their chief officers on a preliminary run of the new train from Dublin to Cork and back on August 11. The guests included the following:—

Mr. Sean Lemass, Minister for Industry and Commerce; Mr. J. J. Simmington, Mr. G. H. Burrowes, Mr. T. A. Grehan and Mr. Brunicardi, of the Dublin newspapers; Mr. J. M. Irwin, Irish Traffic Manager, L.M.S.R.; Mr. Baird, Burns & Laird Line; Mr. G. B. Howden, Chief Engineer, G.N.R. (I.); Mr. F. S. Veltom, Traffic Manager for Ireland, G.W.R.; Mr. W. Giles, Irish Manager, Thomas Cook & Sons; Mr. A. W. Hewitt, of Hewitt's Travel Agency, Mr. J. Rogerson, of the American Express Company; Mr. H. Phillips, General Manager of the Grand Canal Company; and Mr. McMillan, President of the Engineering and Scientific Association of Ireland.

The train left Dublin at 10.25 a.m. and arrived in Cork at 1.50 p.m. There the passengers were transferred by bus to the *ms. Innisfallen*, of the City of Cork Steam Packet Company, which conveyed them and other guests on a tour of Cork harbour, out to the Old Head of Kinsale and back to Cobh (Queenstown). The train was rejoined at Cobh and ran thence to Cork and Dublin, which was reached 25 min. before time, after two stops *en route*. The actual time of the journey from Cork to Dublin was 163 min. for 165½ miles.



*Steel-covered Irish travelling post office van, Great Southern Railways*

## HENSCHEL-BUILT 4-8-4 TANK ENGINE FOR MOROCCO

*A powerful metre gauge locomotive designed to negotiate sharp curves*

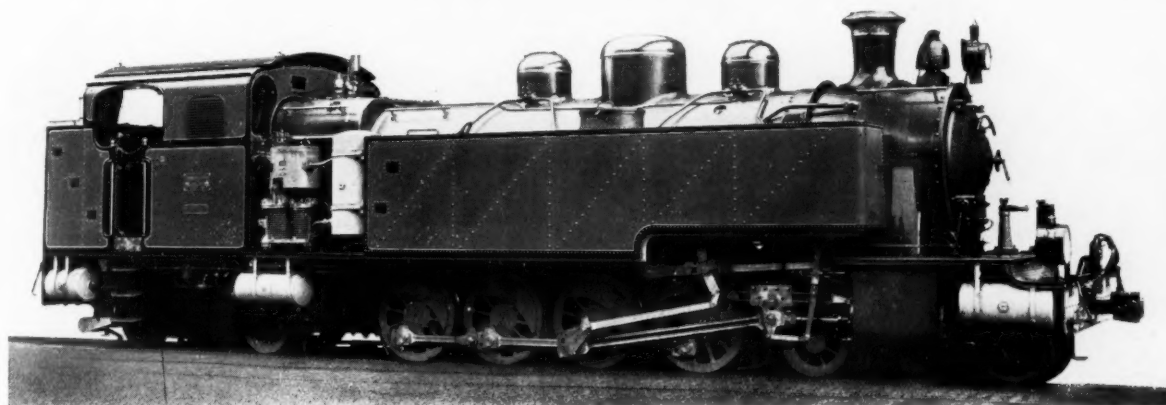
THE firm of Henschel & Sohn A.G., of Kassel, has recently supplied for service in Morocco a metre gauge 4-8-4 tank engine, designed with a maximum axle load of 14.3 metric tons (14 tons 1 cwt.), and for a minimum radius of curvature of 90 m. (295 ft.); the maximum speed is 40 km. (24.8 m.) p.h. The cylinders are outside the frames and drive the second pair of coupled wheels; steam distribution is by means of Walschaerts gearing and piston valves. The boiler is fitted with a Belpaire firebox, but superheating apparatus is not included; otherwise the equipment of the locomotive is on a liberal scale.

In working order the engine weighs 87.0 metric tons (85 tons 12 cwt.) and the adhesion weight is 57.0 metric tons (56 tons 2 cwt.). The water capacity of the tanks

is 12 cu. m. (2,640 gallons), and 3.2 metric tons (3 tons 3 cwt.) of fuel are carried on the engine frames. A tractive effort of 27,430 lb. is developed.

The following are the main particulars:—

Cylinders, dia. . . . .	520 mm. (20½ in.).
„ stroke . . . . .	540 mm. (21¼ in.).
Coupled wheels, dia. . . . .	1,060 mm. (3 ft. 5¾ in.).
Bogie wheels, dia. . . . .	720 mm. (2 ft. 4¾ in.).
Wheelbase, rigid . . . . .	2,350 mm. (7 ft. 8½ in.).
„ total engine . . . . .	11,400 mm. (37 ft. 4⅞ in.).
Boiler working pressure . . . . .	12 at. gauge (170.6 lb. per sq. in.).
„ heating surface total . . . . .	192.4 sq. m. (2,070.2 sq. ft.).
Grate area . . . . .	3.2 sq. m. (34.43 sq. ft.).



PRIVATE INITIATIVE AND U.S.A. RAILWAY SAFETY.—Mr. Joseph B. Eastman, the U.S.A. Federal Co-ordinator of Transport, has recently made a statement to the Motor Truck Club at Boston for which he is challenged by our American contemporary, the *Railway Age*. Mr. Eastman said: "It is highly significant that in the history of the railroads practically every safety device required by governmental authority, such as the air brake and the automatic coupler, has ultimately operated to their very great benefit and advantage." The *Railway Age*, while acknowledging the fairness of most of the Co-ordinator's comments, refutes this one by pointing out that although air brakes and automatic couplers did not become statutory requirements until 1893, a report of the Interstate Commerce Commission for 1889 recorded that continuous brakes, which had been manufactured by the Westinghouse Air Brake Company since 1870, were already almost universal on passenger cars; the same commission's report for 1894 showed that 97 per cent. of these vehicles had automatic couplers by the time the law came into force. Good progress had also been made with similarly equipping goods locomotives and rolling stock. The *Railway Age* emphasises that while legislation has sometimes hastened the adoption of such devices, the need for them has been recognised earlier, and supplied, by private enterprise.

THE RAILOWNER.—In the August issue of *The Railowner*, the monthly publication of the British Railway Stockholders Union Limited, is an article by "Abu Anga" entitled "The Complicated Day Ticket." The author's argument is that the restrictions as to day of travel and train used tend not only to discourage passengers, but also to make complications which are of little or no benefit to the railway companies. He feels that if day tickets were issued every day to all stations and were available by all trains (with the possible exception of a few luxury expresses), such facilities would decrease the advertising expenditure incurred by the railway companies and also the work performed in their booking offices, and would probably increase passenger revenue materially.

Under the title of "The Next Phase," Sir Charles Stuart-Williams, the Chairman of the British Railway Stockholders Union, reviews the results of 1934 in comparison with 1933 and looks into the immediate future in the light of proposed electrification, international trade, and unemployment. He concludes by stating that, while some problems will not prove to be capable of an immediate solution—in which case it must be hoped that the increasing efficiency of British railways will offset to some extent a possible loss in gross receipts—he believes there is still a prosperous future for the great railway companies in which the members of his union are interested.



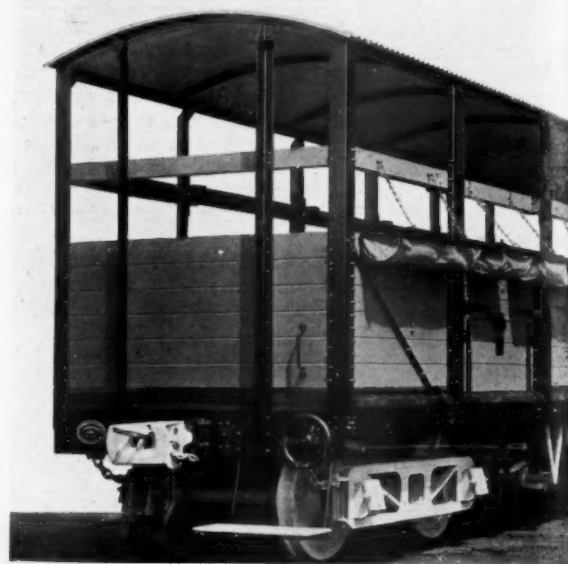
## NEW FREIGHT TRAIN ROLLING STOCK FOR THE NIGERIAN RAILWAY

*Fifty cattle wagons of improved design are under construction by the Birmingham Railway Carriage & Wagon Co. Ltd.*

THE accompanying photographs show one of 50 new bogie covered cattle wagons which are at present being built by the Birmingham Railway Carriage & Wagon Co. Ltd. for the Nigerian Railway and to the order of the Crown Agents for the Colonies. These vehicles represent a distinct advance over the existing open type, and as the cattle have to travel over the Nigerian Railway from Kano to Lagos, a distance of 704 miles, they will benefit considerably by the improved features of construction. These include roofs to form a protection from the sun, and water troughs for watering the cattle *en route*. The troughs are of special interest, and the problem of where to fit them has been solved by adopting a collapsible canvas pattern on the outside of the wagons. The animals therefore do not have to lower their heads to get to the water, and the danger of their horns getting entangled or sustaining other injuries is avoided. The troughs, which are clearly shown in the illustrations, are brought into use by hooking a chain up or down as the case may be.

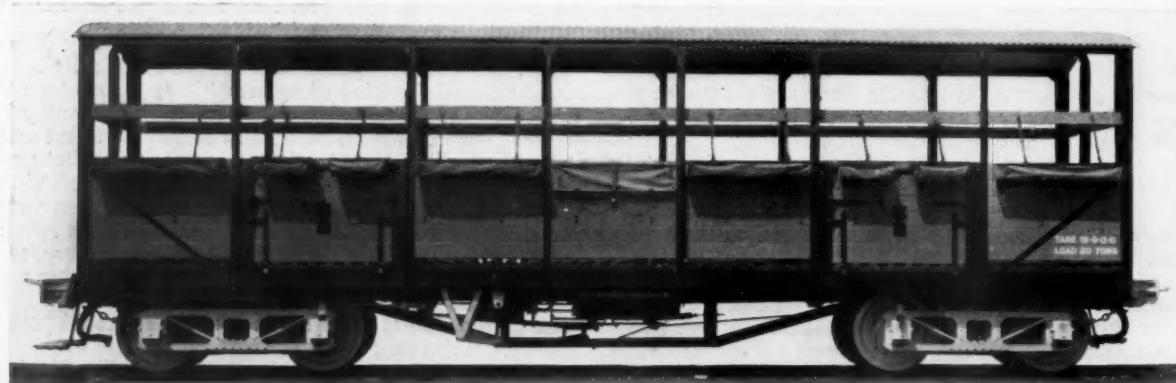
The wagons have slightly cambered floors with side openings for floor drainage and ventilation of the underbodies of the cattle. They have lowered ends with bottom slots for ventilation, and are mounted on Sheffield Twin-borrow wagon bogies. Another feature is the fitting of the brake gear with Dabeg slack adjusters supplied by the Vacuum Brake Company. The principal dimensions are as follow :—

Length over headstocks .. .. .	35 ft. 0 in.
Height over all .. .. .	12 ft. 0 in.
Width over side stanchions .. .. .	8 ft. 1 in.
Centres of bogies .. .. .	25 ft. 0 in.
Wheelbase .. .. .	5 ft. 6 in.
Width of doorways .. .. .	4 ft. 6 in.
Wheels, dia. .. .. .	2 ft. 9½ in.



*Three-quarter view of cattle wagon showing cambered floor and automatic centre coupler*

These carefully designed and well-built vehicles further indicate the high standard reached during recent years in rolling stock of various kinds built in Great Britain for service on the Nigerian Railway.



*Side view of one of the 50 cattle wagons supplied to the Nigerian Railway by the Birmingham Railway Carriage and Wagon Co. Ltd. Note the collapsible canvas water troughs ranged along the side*

**WEEK-END TOUR BY P.L.M. STREAMLINED TRAIN.**—The high-speed capabilities of the P.L.M. steam-hauled streamlined train (illustrated in our issue of April 12) have facilitated the arrangement by Thomas Cook & Son of a tour from Paris to the Jura mountains and back in the space of a week-end. The train will leave Paris at 2.0 p.m. on August 24 and run the 195½ miles to Dijon in 191 min. On Sunday morning passengers will proceed

to Bourg (88½ miles from Dijon), doing the journey in 90 min. From Bourg a road excursion will be made to La Cluse, Nantua, Saint-Germain-de Joux, Saint Claude, Mosez, Champagnole, and Mouchard, where the train will be rejoined at 6.50 p.m. Leaving Mouchard at 7.25, the train will return to Dijon and Paris, arriving at about midnight. Dinner will be served *en route*. The inclusive fare, second class, is fr. 270, or fr. 320 first class.



Completely assembled 4-6-0 locomotive built by the North British Locomotive Co. Ltd. for the Palestine Railways being shipped from the Clyde on one of Christen Smith's "Belships"



Road haulage of 4-6-0 locomotive from North British Locomotive Co. Ltd. works to the riverside for shipment to Palestine  
(See editorial note on page 262)



Photo by]

[Newcastle Evening Chronicle

**L.N.E.R. (North Eastern Area)  
officers at Best Kept Stations In-  
spection (See article on page 287)**

(1) Mr. K. P. Walker, District Goods and Docks Manager, West Hartlepool ; (2) Mr. T. F. Cameron, Staff Assistant to Superintendent, North Eastern Area ; (3) Mr. A. Collinson, Assistant Superintendent, North Eastern Area ; (4) Mr. A. S. Pearson, Assistant to Goods Manager, North Eastern Area ; (5) Mr. W. A. Fiddian, District Superintendent, Newcastle-on-Tyne ; (6) Mr. E. F. Wilkinson, District Passenger Manager, Newcastle-on-Tyne ; (7) Mr. Middleton, Stationmaster, Whitley Bay station



**Paddington station snack bar, G.W.R., believed to be the first at a railway station in this country. (See article on page 243 of last week's issue, and editorial note on page 262)**



# RAILWAY NEWS SECTION

## PERSONAL

M. Emile Pellarin, Ingénieur des Ponts et Chaussées, has been appointed General Manager (Directeur) of the Eastern Railways of France. He replaces M. Riboud, who has retired and has been nominated Directeur Honoraire. M. Pellarin had previously held the position of Assistant General Manager (Sous-Directeur).

We regret to record the recent death of Mr. Charles Seton Sinclair Guthrie, Member of the Port of London Authority. A memorial service for Mr. Guthrie was conducted by the Rev. P. B. Clayton, C.H., M.A., Chaplain to the P.L.A., at All Hallows, Berkynge-chirche-by-the-Tower on August 9. Among those present were:—

Lord Richie of Dundee, Chairman; the Rt. Hon. Thomas Wiles, P.C., Vice-Chairman, Sir David J. Owen, General Manager, and a number of members and officers.

## INDIAN RAILWAY STAFF CHANGES

Mr. I. W. K. Smith has been appointed to officiate as Chief Engineer, E.I.R., as from June 24, and Mr. K. B. L. Mathur has been appointed Deputy Chief Engineer in Mr. Smith's place, as from the same date.

Mr. A. H. Joscelyne, Chief Mechanical Engineer, E.B.R., has been permitted to retire from Government service as from July 6.

Mr. E. E. Ellis, Deputy Chief Commercial Manager, E.I.R., has been granted 15 months' leave preparatory to retirement as from July 23.

Mr. P. H. Yeld, Officiating Deputy Traffic Manager, Transportation, E.B.R., has been granted two months' leave from July 17.

Mr. E. Mayes, District Mineral Agent, Peterborough, L.N.E.R., has been appointed District Mineral Agent, Doncaster.

Mr. W. W. Grierson, sometime Chief Engineer, Great Western Railway, whose death was recorded in our issue of March 22 last, left estate valued at £42,052 (£34,215 net).

We regret to record the death, on August 13, of Professor Henry Adams, Consulting Engineer, in his 90th year. Professor Adams, as well as being the inventor of the Adams vortex locomotive blast pipe, will be remembered by hundreds of ex-students as Professor of Engineering at the City of London College for 35 years.

Mr. A. F. Harvey, F.C.H., as announced in THE RAILWAY GAZETTE of April 19, was appointed to officiate as Agent of the Eastern Bengal Railway with effect from March 2. Subsequently however, the substantive Agent, Rai Bahadur B. R. Singh, was permitted to retire from Government service on March 18, *vide* our issue of May 24.



Mr. A. F. Harvey, F.C.H.,

Appointed Officiating Agent, Eastern Bengal Railway

Mr. Harvey was born in 1884 and received his theoretical training at the Royal Indian Engineering College, Coopers Hill, where he was first in his year, gained three scholarships and the O'Callaghan Gold Medal; and was also awarded the F.C.H. He was appointed by the Secretary of State to be an Assistant Engineer, and was posted to the Eastern Bengal State Railway in 1905: he was promoted Executive Engineer in 1913. Other appointments held by him were Assistant Agent and Officiating Deputy Chief Engineer, but in 1924 he was transferred as Assistant Secretary to the Railway Board and was afterwards designated Deputy Director, Stores. Mr. Harvey was appointed to officiate as Technical Officer to the Railway

Board in the following year. In 1929, however, he returned to the E.B.R., as Engineer-in-Chief, Surveys and Constructions, and as Officiating Deputy Chief Engineer nine months later. He also officiated as Chief Engineer on several occasions between 1930 and 1932, when he was confirmed as Deputy and was, moreover, appointed Director of Civil Engineering with the Railway Board. Mr. Harvey was posted as Chief Engineer, E.B.R., in September last preparatory to his becoming Agent.

Mr. Hugh Guthrie, the Canadian Minister of Justice, has been appointed Chairman of the Board of Railway Commissioners in Canada.

It is with regret that we note the death on August 8 of Mr. Kenneth Sutherland Murray, Honorary Governor of the British Oxygen Co. Ltd.

From the *London Gazette*, August 13: The King has been graciously pleased to confer the Efficiency Decoration upon the undermentioned officer under terms of the Royal Warrant dated September 23, 1930: *Engineer and Railway Staff Corps*—Col. Sir Cyril Reginald Sutton Kirkpatrick, Kt., M.Inst.C.E. Col. Sir Cyril was sometime Chief Engineer, Port of London Authority, and President of the Institution of Civil Engineers.

## MR. WILLIAM WHITELAW

Mr. William Whitelaw, Chairman of the London & North Eastern Railway Company, is the subject of the following appreciation in *The Railowner*, the official organ of the British Railway Stockholders Union Limited.

"Mr. William Whitelaw stands almost alone amongst the Chairmen of our great railways in so far as we rarely think of him in any other connection. His is not an outstanding figure in the world of finance; he does not preside over a number of prodigious industrial concerns, neither does he figure in the political history of the day. Yet, without any extraneous aid, his name is known everywhere, and the influence that he exerts within his own company is certainly not less than that of any other railway chairman of modern times. What, then, is the secret of his success—how does it happen that, more easily than most men, he can silence opposition, still criticism, and bring a hostile meeting to share his views?

"That this is the case, no one who has

attended the annual meetings of the L.N.E.R. within recent years will dispute. The history of the stockholders has been appalling, their grievances can scarcely be exaggerated; it would be contrary to human nature if at these meetings hundreds of men and women did not desire to express



**Mr. H. E. Horne**

Appointed Assistant Chief Commercial Manager (Passenger), L.M.S.R.

themselves in some vote likely to cause difficulty to the men who have their affairs in charge. And then Mr. Whitelaw rises; he makes a few remarks, speaking easily, lucidly and quietly, and within an incredibly short space of time the opposition is silenced and we are conscious that when a vote is taken the critics will scarcely make

a showing. What is the explanation? As we believe, it lies in the all-important fact that, whether we agree with him or not, we are convinced that he is not secretly seeking to mislead us—that, in short, he is telling us precisely what he believes to be the case. We remember that his sources of information are far superior to our own and, little by little, the possibility makes itself felt in our minds that, after all, perhaps he may be right. So Mr. Whitelaw finishes his speech and, almost without astonishment, we find that we have raised our hand with the rest.

"As we have intimated, we do not always see eye to eye with Mr. Whitelaw. We still think that the electrification of the old Great Eastern services might with advantage have been carried out fifteen years ago, and again, we have never been able to understand the precise reasons which have governed some appointments to the L.N.E.R. board. But when Mr. Whitelaw states that he deferred electrification in the interests of the stockholders we know that that was precisely the reason for which he deferred it, and again, when he assures us that in making an appointment to the board he was guided solely by the interests of his company, we know that no other consideration had weight with him."

Mr. H. E. Horne, who as announced in THE RAILWAY GAZETTE of August 9, has been appointed Assistant Chief Commercial Manager (Passenger), L.M.S.R., is a native of Leeds, and entered the service of the former Midland Railway as a junior clerk at Armley (Leeds) in December, 1888. After experience in various capacities at Newlay and Horsforth and at

Newark-on-Trent, he went in 1896 to Derby, where he was subsequently appointed Relief Clerk, being primarily engaged in relieving stationmasters. Appointed Stationmaster at Harpenden in 1899, Mr. Horne became Stationmaster at Cheltenham in 1907, and for the greater part of 1909 was at Derby



**Mr. J. Taylor Thompson, M.C.**

Appointed District Engineer, Darlington, N.E. Area, L.N.E.R.

with Mr. (afterwards Sir) Cecil Paget, the then General Superintendent, in connection with special work. In December, 1909, he went as Stationmaster to Leeds (Wellington), a post which he held until October, 1916, when he was transferred to Derby as Assistant Superintendent of Passenger Services. Mr. Horne occupied this



*Main façade of the new Milan Central station, Italian State Railways. This notable station was fully described and illustrated in our issue of September 11, 1931, subsequent to the formal opening on July 1, 1931. The square in front of the main entrance was not then laid out*

position at the formation of the L.M.S.R. in January, 1923, when he was appointed Assistant for Passenger Services to the Chief General Superintendent. In June, 1929, he was appointed Assistant General Superintendent (Passenger Commercial) and in October, 1932, Assistant (Passenger) to the Chief Commercial Manager. While at Derby as Assistant to the General Superintendent of Passenger Service, Midland Railway, Mr. Horne was largely responsible for the introduction and subsequent organisation of the system of passenger train control.

Mr. J. Taylor Thompson, M.C., A.M.Inst. C.E., who, as announced in our issue of August 9, has been appointed District Engineer, Darlington (N.E. Area), L.N.E.R., received his early training on the North Eastern Railway at Newcastle. He was later engaged principally on new works, including the extension of the Ponteland Railway, and was intimately associated with the pre-war schemes for developing the coal shipping facilities on the North-East Coast, being engaged in particular on the design and construction of the new staiths at Dunston and Blyth. After the war, during which he was in command of a Royal Engineer Section attached to the Artillery on the Western and Italian fronts, he carried out the important underpinning work on the foundations of the High Level bridge at Newcastle, and subsequently had charge of the reconstruction both of the roadway portion, which was strengthened to carry tram-lines over the bridge—to link up Newcastle and Gateshead—and of the Red Barns tunnel in Newcastle. In 1925 he became Personal Assistant to the Engineer (Mr. John Miller, B.E., LL.D., M.Inst.C.E.) and later Assistant to Engineer, being concerned largely with constructional work, including the widening of the main line between York and Northallerton and the new inward goods yard at Hull. He is a Vice-Chairman of the Yorkshire Association of the Institution of Civil Engineers and has contributed papers to that association on the development and organisation of railway engineering work.

Mr. A. Urquhart has been promoted to the position of Staff Superintendent and General Inspector, New Zealand Government Railways. Mr. Urquhart joined the service in Dunedin as a cadet in 1899. He was transferred in October, 1921, to the District Office, Wanganui, where he remained until March, 1924, in which month he was transferred to head office, Wellington. In June, 1927, Mr. Urquhart was appointed Assistant Staff Superintendent, and in December, 1931, he was promoted to the position of Staff Superintendent. As a result of the recent reorganisation his post has assumed added responsibilities, and also embraces the duties of General Inspector.

## Performance of 2-6-0 Locomotives, L.M.S.R. (N.C.C.)

A recent run, timed by a correspondent on the up Portrush Flyer of the L.M.S.R. (N.C.C.), illustrates well the capabilities of the latest 2-6-0 locomotives. The following is the log:—

7-15 p.m. Portrush-Belfast					
Load: 287 tons tare, 315 tons full					
Engine: No. 96, Silver Jubilee					
Driver McNally; Fireman Graham (Belfast Shed)					
Miles	Schedule	Min.	Sec.	M.P.H.	
0-0 Portrush	0	0	00		
2-7 Portstewart	7½	8	00	30 max.	
0-0		0	00		
3-3 Coleraine	5	6	18	60	
7-9 Macfin	11	11	28	51½	
11-6 Ballymoney	16	15	50	61	
0-0		0	00		
5-4 Mile Post 48	0	10	50	40	
12-2 Glarryford	16	18	58	62	
19-9 Ballymena	26	26	55		
0-0		0	00		
8-6 Cookstown Junction	10	10	33	60	
11-7 Antrim	13	12	22	69	
15-1 Dunadry	16	16	39	60	
20-1 Doagh	22	22	33	48	
22-8 Ballyclare Junction	25	25	47½		
27-7 Whitehouse	30	30	57	60	
31-0 Belfast (York Road)	38	36	05		

† Max. on descent 67; slack to 50 over Greenisland loop line

Except for the steep descent from Ballyclare Junction and through Coleraine, where speed was moderated, full open regulator was used throughout. Starting out of Portrush up 1 in 76-102, cut-off was reduced from an initial 40 to 30 per cent.; up the 5½-mile bank from Ballymoney at 1 in 114-139-149 between 35 and 40 per cent. was used, while on the easy stretches between 12 and 20 per cent. sufficed. The 10-mile climb beginning at Antrim, on a grade averaging 1 in 200, was taken at an average of 53.7 m.p.h., cut-off being gradually advanced from 15 per cent. on passing Antrim to 30 per cent. for the last 3 miles. This maintained a speed of 48 m.p.h. up the final 1 in 186 grade.

Scottish coal was used and a total of only 162 shovelfuls were put on, never more than 4 at a firing; this indicates an average consumption of 28-29 lb. per mile. The total water consumption was 1,600 gallons, or 25 gallons a mile. These are excellent results in the circumstances.

## Berth and Seat Reservation in New Zealand

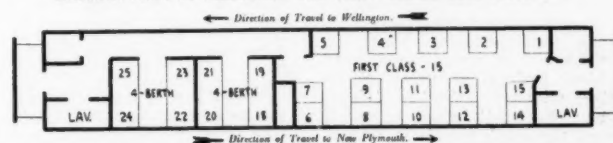
A novel guide has been prepared by the Publicity Branch of the New Zealand Railways for the guidance of hotel guests who wish to travel by train. All hotels are provided with a foolscap-sized book which contains on each page a seating plan of each type of car on one of the principal runs, or a berthing plan of a sleeping car. Particulars are given to indicate the direction of travel, the time of the train at each principal station and the fares between principal stations, and also particulars of refreshment stations *en route*. By arrangement with railway booking offices, after the hotel guest has indicated the kind of reservation desired, the necessary telephone reservations are made. The guide has been in use only a week or two but already railway travellers have expressed much pleasure with the arrangement, which enables them

to know beforehand the exact position they have been allotted on the train. In this way travellers' preferences are conveniently met.

We have received a copy of this guide, with its very useful and comprehensive information, from our correspondent in New Zealand. Though, no doubt, such a guide could not be prepared for use on many railways, it could with advantage be copied by numerous other administrations. The great convenience to tourists and travellers generally in knowing the exact location of their seats or berths, and all the other details of their journeys, at their hotels can hardly be over-estimated, and the New Zealand Railways administration is to be congratulated upon this striking innovation. We reproduce below a sample page from this guide.

### WELLINGTON—NEW PLYMOUTH EXPRESS (and vice versa).

SEATING PLAN OF SLEEPING AND FIRST CLASS COMPOSITE CAR.



### PARTICULARS OF TIME-TABLE, FARES, ETC.

#### DAILY SERVICE (SUNDAYS EXCEPTED).

No. 17†		No. 17†	
Express departs WELLINGTON	8.55 a.m.	Express departs NEW PLYMOUTH	8.55 a.m.
OTAKI	11.45	LEPPINGTON J.	8.55
PALMERSTON NORTH	12.05	WELLWOOD	9.15
FEILDING	1.25	STRATFORD	9.37
MARTON J.	1.45	ELTHAM	9.59
ARAROHU	2.05	HAWERA	10.21
WANGANUI (Interim)	2.25	PATEA	10.43
WANGANUI (Regd.)	2.45	ARAROHU	10.65
PATEA	3.05	WANGANUI (Regd.)	11.27
HAWERA	3.25	WANGANUI (Interim)	11.49
ELTHAM	3.45	MARTON J.	12.11
STRATFORD	4.05	FEILDING	12.33
WELLWOOD	4.27	PALMERSTON NORTH	12.55
LEPPINGTON J.	4.49	OTAKI	1.17
NEW PLYMOUTH	5.11	NEW PLYMOUTH	5.11

† Indicate numbers of Express Trains in above in Official Public Time-table.

#### FARES BETWEEN PRINCIPAL STATIONS.

	From WELLINGTON		From NEW PLYMOUTH	
	Single	Return	Single	Return
OTAKI	8 s. 6	15 s. 6	8 s. 6	15 s. 6
LEVIN	9 s. 6	16 s. 6	9 s. 6	16 s. 6
FEILDING	10 s. 6	17 s. 6	10 s. 6	17 s. 6
MARTON J.	11 s. 6	18 s. 6	11 s. 6	18 s. 6
ARAROHU	12 s. 6	19 s. 6	12 s. 6	19 s. 6
WANGANUI	13 s. 6	20 s. 6	13 s. 6	20 s. 6
PATEA	14 s. 6	21 s. 6	14 s. 6	21 s. 6
HAWERA	15 s. 6	22 s. 6	15 s. 6	22 s. 6
ELTHAM	16 s. 6	23 s. 6	16 s. 6	23 s. 6
STRATFORD	17 s. 6	24 s. 6	17 s. 6	24 s. 6
WELLWOOD	18 s. 6	25 s. 6	18 s. 6	25 s. 6
LEPPINGTON J.	19 s. 6	26 s. 6	19 s. 6	26 s. 6
NEW PLYMOUTH	20 s. 6	27 s. 6	20 s. 6	27 s. 6

SLEEPING-BERTHS are available at an additional charge of 10s. for each journey made.

REFRESHMENTS are obtainable at PAKAKARAKI, PALMERSTON NORTH, MARTON JUNCTION, ARAROHU, PATEA, and HAWERA.



## MINISTRY OF TRANSPORT ACCIDENT REPORT

### King's Langley, London Midland & Scottish Railway: March 13, 1935

The plan herewith, reproduced from Colonel Mount's report on this accident, is so self-descriptive as to require little amplification. Four trains were involved, as follows: a meat train on the up fast line came to a stand in the section between Nash Mills and King's Langley owing to the fracture of a vacuum brake pipe in the cab of the engine. It stood there for apparently six minutes whilst the defect was remedied by the enginemmen and had just restarted when it was run into by a milk train. The collision fouled the down slow line and caused a down freight to be derailed, and a coal train on the up slow line ran into the wreckage. All the trains were fully loaded and represented a total weight of some 2,730 tons, and the debris extended for about 120 yd. There was one fatality. Driver Buckley, of the milk train, after the first collision, sent his fireman forward to protect the down fast line as he knew that the 10.50 p.m. express from Euston to Aberdeen was due. They had just passed the coal train on the up slow, so Buckley said he would attempt to stop the coal train. He left the footplate on the left-hand side but was evidently caught by the wreckage of the second collision and killed. The only other trainman who needs to be mentioned, is the guard of the meat train. He was badly hurt in the collision and his memory was affected. The fireman said that before they restarted the guard exchanged signals with the enginemman and it is suggested that he was on his way to the engine to see what was amiss when the train restarted. It is assumed that he then gave the hand-lamp signal and returned to his van.

After describing how services from Euston were worked despite this remarkable obstruction of the L.M.S. main line (see THE RAILWAY GAZETTE of March 22), Colonel Mount observes:—

The modernisation of this four-track main line with the latest "C" type block equipment has been recently carried out between Willesden Junction and Cheddington, a distance of approximately 31 miles. A considerable amount of track circuiting has been installed, boxes are equipped with normally-out illuminated diagrams, block instruments are of three-position, three-wire type, the home signal is proved at "danger" before line clear can be given, the track circuit in rear of it places and maintains the needle in the train on line position, and the starting signal is correspondingly released by line clear for one pull only. In fact, the installation has provided for interlocking, or closed, block working, and there is electrical or mechanical sequential locking between signals.

King's Langley Station box was renewed four years ago. The frame, which faces away from the line, has 30 levers. The diagram, signal repeaters, instruments, and equipment generally, are of

the latest type; the view from the box is excellent. There is a stove in the middle of the east side, the register is maintained at a desk in the south-east corner, and there is a chair between the two.

The conclusions of Colonel Mount incorporate most of the evidence, and these are here summarised. As a preliminary, it is to be noted that signalman Gibbs of King's Langley was accompanied in the box on this occasion by relief signalman S. Chownes who had been appointed for the purpose of checking marks in accordance with an appeal of the three signalmen concerned for reclassification of the box from Class 3 to Class 2. Colonel Mount's conclusions are as follow:—

The meat train entered the section at Nash Mills at 11.0 p.m. and was due to pass King's Langley at about 11.3 p.m. Gibbs was aware of this; he had accepted the train and had obtained acceptance for it ahead, at 10.56 p.m. and at 10.58 p.m. respectively, as recorded by Chownes, and had lowered his signals for it. Apparently it was not until about 11.5 p.m. that he proceeded to telephone and inquire about it from signalman Branscombe of Nash Mills.

The two accounts of the conversation vary, but it is clear from Gibbs' practice, referred to later, that the intention of his question, if not the question itself, was to ascertain, as was related by Branscombe, whether he had transmitted the *Out of Section* signal for "the 5" (the meat train) or not. He was informed by Branscombe that that was what he (Branscombe) was waiting for, as the milk train was close behind and the meat train should have passed King's Langley some 2 or 3 minutes before the question was raised. Gibbs immediately transmitted the signal without having seen the meat train, under the plea that Branscombe had referred to "the Stafford," a passenger train which had passed King's Langley at 10.55 p.m., perhaps 10 minutes previously.

On Gibbs' behalf it should be said that on taking this action he immediately telephoned ahead to signalman Hadaway of North End Tunnel box, Watford, referring to "the Stafford," with the result that Hadaway took corresponding action. Having lowered his signals for the train, as already stated, Gibbs also replaced them without seeing the train pass them, and Hadaway had to do the same thing before he could accept the following milk train which Gibbs proceeded to offer to him. While Branscombe did not transmit the *cancelling* or *Train incorrectly described* signals, Gibbs initiated the former to Hadaway, who followed suit.

I accept signalman Branscombe's evidence, and think it most unlikely that he mentioned the word "Stafford" in the conversation which took place. Obviously he had no reason to do so, and it is difficult to understand how signalman Gibbs can suggest that his reply referred to this train which was signalled by 4 beats and not by 5 beats, and which had passed King's Langley nearly 10 minutes previously. On the other hand, it is to be regretted that Branscombe's suspicions were not at once aroused by Gibbs' inquiry, and that he did not assume that the meat train had broken down, instead of assuming that Gibbs had merely omitted to send the *Out of Section* signal for it.

I consider, however, that no blame attaches to signalman Branscombe, although a great deal of Gibbs' evidence and explanation was spent in a regrettable endeavour to implicate him. It was only his third day on duty in this main line box; but he had been in training during the previous week, and he felt confident and fully capable of taking over his duties. I have no reason for thinking that he was not fit for the responsibilities attaching to his post.

With regard to signalman Gibbs, it is perhaps sufficient to record in his own words

the habit into which he had unfortunately fallen:—

"I have not done such a thing as this before, but I have many a time rung up the box in rear to ask if I have not cleared a train and I have always had the correct answer... I should say this occurs in my case perhaps twice a week. I will explain how it occurs; there are occasions when we have possibly three or four trains passing together and after getting the signals back for the various trains, one is apt to overlook clearing a block instrument and only when I look round to see whether the instruments are correct I sometimes find an instrument remaining at *Train on Line*; it is at that moment that I call up the box in the rear concerning the instrument to verify whether I have cleared or not."

Allied to this recourse to the use of the telephone when pressed, Gibbs pleaded without justification that there was undue pressure on this occasion, and he even went so far as to suggest, indeed he admitted, that he was concerned at the time counting up the marks which signalman Chownes was recording.

I accept neither of these excuses, while the first plea with regard to this telephone conversation with Branscombe has no relevance as in any way condoning his action. Indeed, there is no redeeming feature in this case, and I find nothing to relieve signalman Gibbs of responsibility for this accident, which fortunately had no worse consequences.

This is one of the most heavily worked four-track main lines in the country, and is provided with the latest interlocking block equipment. King's Langley box itself is new and leaves nothing to be desired in respect of comfort and facility for operation. No equipment, however, short of continuous track circuiting, which would hardly be justified, will ensure safety in the hands of an operator who has so little regard for, and interest in, the significance of his block working as to be content to rely upon the telephonic advice of the men on either side of him to verify whether he has carried out his own fundamental duty.

In 99 cases out of 100, this may have saved Gibbs trouble, and he was enabled to operate by rote, avoiding the individual conscientious care which is essential, if such duty is to be performed as the public expects. In the 100th case, however, the resulting lack of confidence, and the verbal misunderstanding which the block instrument is there to avoid, brought about the breakdown of the most carefully designed and efficient equipment.

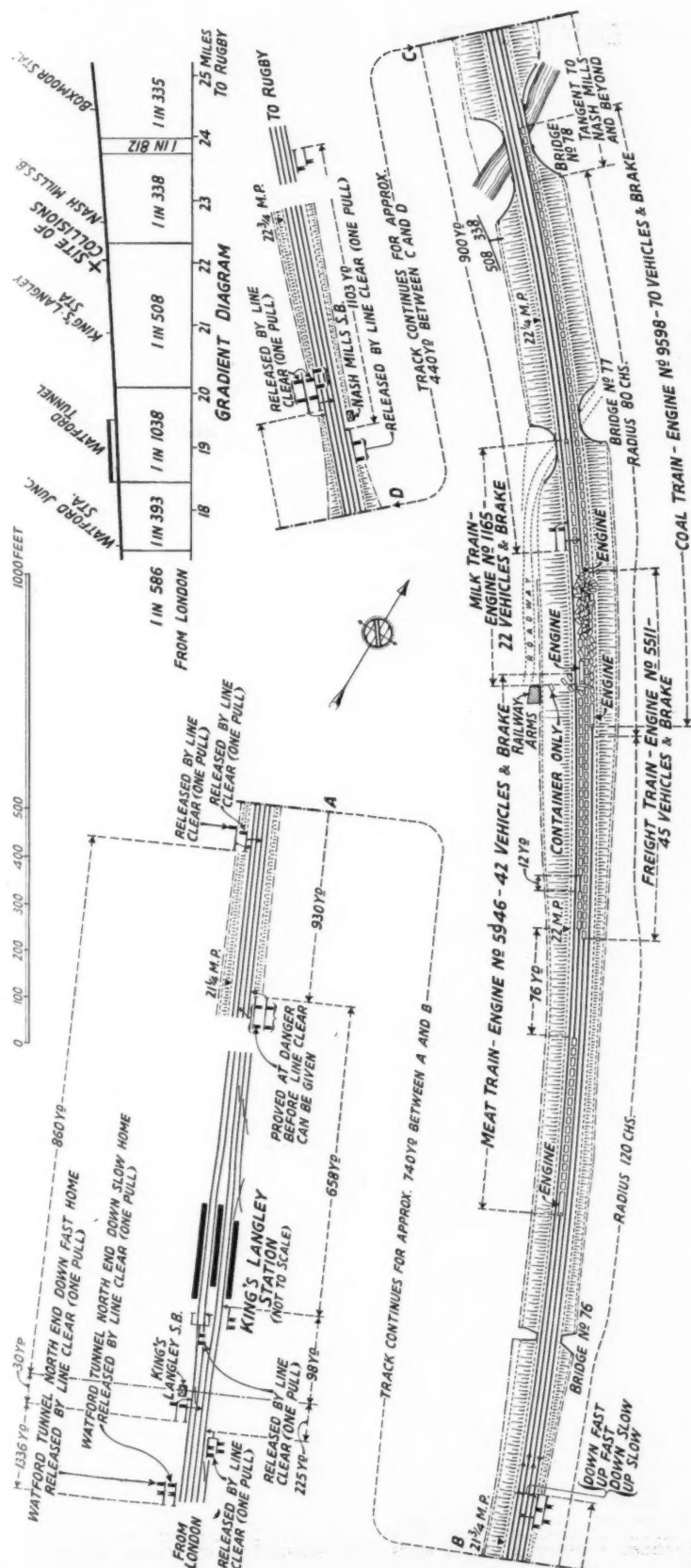
Signalman Gibbs has intelligence and was fully aware of all rules and regulations. With plenty of time in hand, if his mind had been concentrated on his work, he had only to act in accordance with block telegraph regulation 11, and stop and caution the down freight train, as he subsequently stopped the down express. In the circumstances, however, his failure to obey this regulation, which materially worsened the results of his initial mistake and caused the second and third collisions, came about by lack of alertness, consequent upon his preparedness to perform his work indolently, depending upon every train passing normally without hitch and upon the men on either side of him to safeguard his errors or omissions.

In fact, Gibbs' failure and subsequent effort to place the blame on his colleague for having failed to advise him that the meat train had not passed him, confirms the view that the high sense of discipline, which is so essential among signalmen and I am glad to say generally exists, was lacking in his case, rendering him unsuited to retain the responsible position he held. He is 43 years of age and entered the service in 1911; he has been a signalman for 21 years, the last 13 having been spent at King's Langley. His record is a clear one.

District relief signalman Chownes was not acting in a responsible capacity, but he is a man of long experience and it seems surprising that although he knew that the meat train had been accepted, he allowed its cancellation to take place without protest or even remark. His excuse was that he was counting up the marks, and in view of Gibbs' admission, I find it difficult to avoid the conclusion that both men were concerning themselves more with this record, and the prospects of raising the classification of the box, than with the operation of traffic.

#### Remarks and Recommendations

The case illustrates very well how reliance for safeguarding an unusual occurrence is



Plan, with key plan and gradient profile as insets, of the L.M.S.R. main line through King's Langley, to illustrate the quadruple collision which occurred there on March 13 last

necessarily dependent upon the signalman performing each of his actions with intelligent interest and deliberation, not thoughtlessly but with due sense of responsibility. His work is governed by simple rules, which do not vary, but from which departure may seriously compromise the integrity of block working.

While I am satisfied that the recurring use of the telephone with regard to block operation as described in this case, is exceptional, I can only suggest that, in the interests of self discipline, the attention of inspectors, and those in authority generally should be drawn to the circumstances which brought about this accident, with a view to continuity of supervision and education, and to the prevention of any irregularity of procedure.

I realise that the use of the telephone for ascertaining how trains are running must largely depend upon the individual and upon prevailing circumstances; but no signalman should allow himself, or be permitted, any latitude in this respect, so far as block operation is concerned, except where the use of the telephone for this purpose is expressly authorised by regulation, as in the event of an emergency.

Further, with a view to the maintenance of co-operative responsibility until the train has passed beyond the section in advance, no signalman ought to assume that the out-of-section signal has been forgotten; failing evidence to the contrary, he should *always* assume that a train has failed to pass through the section, or that the signal is being withheld for good reason.

My attention has been called to a suggestion that these collisions would have been prevented by the use of searchlights on the engines. Owing to curvature of the railway at the site, I think it very doubtful whether such equipment would have had even preventive effect; but, in any case, in main line operation in this country, it would not be desirable from a safety point of view. Apart from the well known inherent disadvantages of an intense beam of light, not only to the approaching driver but to the driver using it, steps are having to be taken today to safeguard the view of enginemen from interference by extraneous road light signals and by street and sign lighting.

### BEST KEPT STATIONS, NORTH EASTERN AREA, L.N.E.R.

The last of this year's series of twelve tours of inspection of stations in the North Eastern Area of the L.N.E.R. that entered for the annual prizes awarded for the best kept stations, was concluded this week, and the result will be announced later. Twice as many stations entered the competition as in 1928 and 20 more than last year, in all 203 stations. The number of possible marks to be gained by stations is as under:—

General condition of passenger station and of goods station also when both are in charge of stationmaster. Orderly arrangements on platforms and tidiness of platform lines	8
Cleanliness and smartness of staff at passenger stations	8
Condition of water closets and urinals	7
Condition of waiting rooms and offices	5
Neatness in exhibition of timetables, bills and notices; also of advertising contractor's or trade advertisements	7
Cleanliness of windows and lamps	5
Cultivation of flowers and shrubs	60
	100

Prizes and certificates are awarded to stations obtaining the undermentioned percentages of the maximum marks:

80 per cent. and upwards	Special or first class
70 per cent. and below 80 per cent.	Second class
60 " " " 70 "	Third class
50 " " " 60 "	Fourth class

## NOTES AND NEWS

**R.A.S. Service to Stoke-on-Trent.**—As from Monday last, August 12, Railway Air Services Limited has inserted an on-request stop in its London Belfast-Glasgow route.

**L.M.S.R. Stations Renamed.**—Upper Birstall station, on the Huddersfield-Leeds line, will in future be known as Birstall Town; and Wootton Pilling halt, on the Bletchley-Bedford line, as Stewartby.

**B.E.A.M.A. Annual Dinner.**—The annual dinner of the British Electrical and Allied Manufacturers' Association is to be held at the Connaught Rooms, London, on Thursday, November 21, when the President, Lord Derby, will be in the Chair.

**Success of German Railway Exhibition.**—From its opening on July 14 until July 31, some 70,000 visitors were admitted to the Nuremberg exhibition now being held in connection with the centenary of the German railways. The exhibition will remain open until October.

**Falcon Wood Station, Southern Railway.**—A new station for which provision has been made in the Southern Railway summer timetable is Falcon Wood, between Eltham Park and Welling, but although building is progressing well, the station is not yet ready. In connection with this new station, with a view to improving train services, a new intermediate signalling section is being introduced at Falcon Wood and the signals will be of the colour-light type.

**Ground Maps for Air Passengers.**—Railway Air Services Limited has just issued a series of five maps in folder form which are to be handed to every passenger joining the service machines in future. Each map deals with a particular route or section of route which is indicated by a straight red line, and aerodromes, railways, roads, rivers, hills, and towns are clearly marked so that the passenger may be able to follow the route below from the landmarks shown on the maps. Castles, abbeys, and cathedrals are also shown, and race-courses marked by a small red horse-shoe.

**G.W.R. Ambulance Movement.**—Last week we were able to announce that Messrs. S. Morris, F. G. Wainwright, and H. S. B. Whitley, divisional officers of the Great Western Railway, had, in recognition of the support given to the ambulance movement, been admitted to the Order of St. John. We are now gratified to learn that Mr. Trevor Roberts, Divisional Superintendent, Newport, who is a member of the Headquarters' Committee of the Priory for Wales, has, on the recommendation of that authority, been elected an Officer of the Order of St. John of Jerusalem. Mr. Trevor Roberts, in his capacity as officer of

the company, has done much in innumerable ways to encourage the staff to make themselves proficient in first-aid knowledge, and is a familiar figure at staff gatherings in his territory. This recognition will be a source of pleasure to railway ambulance workers in the Newport Division.

**Mystery Excursion by G.W.R. Railcar.**—A mystery excursion by one of the new G.W.R. streamlined railcars will be run from Worcester (Foregate Street station) this Sunday. The fare is 2s. 6d. for a tour lasting five hours over an undivulged itinerary. Accommodation is limited to 65 adult passengers.

**Modification of Rates for Certain Foodstuffs.**—The British railways have decided upon a modification of their owners risk charges for certain foodstuffs conveyed by passenger train in Great Britain, which will be of great value to traders. The new charges affect the carriage of foodstuffs included under the "S" scale, covering bacon, brawn, butter, cheese, cream, lard, meat, tinned milk, pies, sausages, suet, &c., in consignments weighing 12 to 16 lb. inclusive. The new charges apply forthwith.

**L.M.S.R. Ambulance Movement.**—The work of the following members of the L.M.S.R. staff for the L.M.S. ambulance movement has earned them admission into the Venerable Order of St. John in the grade of Serving Brother: Messrs. W. Ross, D. Genovese (Liverpool), A. Wells (Plodder Lane), A. Fairbrother (Hellfield), W. Boswell (Chapel-en-le-Frith), A. Buttrick (Goole), G. E. Farmer (Rugby), J. H. Green (Castletorpe). Mr. J. Clarke, prior to retirement employed at Addison Road, has been promoted to Officer of the order, whilst Capt. S. T. Beard, O.B.E., District Ambulance Secretary, Abergavenny, has been awarded the King's Jubilee Medal in recognition of his ambulance services in South Wales.

**G.W.R. Centenary B.B.C. Broadcast.**—In the B.B.C. National programme of the evening preceding the Great Western Railway Centenary, which is to be celebrated on August 31, a special programme will be broadcast to mark this milestone in British railway history. The main theme of the broadcast is a journey from Paddington to Penzance, the most westerly rail-point in England. Accompanying themes on the journey will deal with the history of the Great Western and with the railway as it is to-day. As listeners progress on their imaginary journey westwards, the story of noteworthy bridges and tunnels will be unfolded, the building of the railway by Brunel will be described, and an account given of conditions of travel and work that existed not so very long ago. Advantage will be taken of suitable points on the journey to bring to

the microphone living people of the railway of today, including the manager of the Paddington Lost Property Office, the drivers of the Cornish Riviera Limited and the Cheltenham Flyer, a Swindon works fitter, the Torbay Express chef, who cooks for 200 a day in a "room smaller than the average kitchen scullery," a ticket collector, and other personalities.

**Railway Damage in Italian Dam Burst.**—The bursting of a dam near Ovada belonging to the Genoa Electric Company interrupted all railway communication in the district. Among the damage was the destruction of a bridge near Molare on the Ovada-Acqui line, which was washed away eight minutes after a passenger train had passed over it.

**Further Section of Turkish Railway Opened.**—The Fevzipasa-Diargbekr line in Anatolia has been completed as far as Argana (Ergani) and is now open for traffic to that point, thus providing rail communication between the Argana copper mines and the sea at Mersina. Work on this railway was completed from Fevzipasa as far as the river Euphrates by the Swedish firm of Nydquist & Holm in 1932. When the river had been bridged near Malatia work was stopped for lack of funds. It was subsequently resumed under the direction of the Turkish Government and was officially opened to Mamuret el Aziz on August 10, 1934.

**The Fliegende Frankfurter.**—Preparatory to entering regular service yesterday (August 15) as the third diesel-electric express of the German State Railway, the Fliegende Frankfurter made a trial run on Monday. Leaving Frankfurt at 6.40 a.m., and stopping at Erfurt, Weimar, and Leipzig, it arrived at Berlin terminus punctually at 11.46 a.m. On this schedule the train covers the distance of 335 miles at an average speed of 65½. On Monday a maximum speed of 105½ m.p.h. was attained between Leipzig and Berlin. Leaving Berlin again at 6.24 p.m. and reaching Frankfurt at 11.29 p.m., the train is scheduled to take one minute less on the return journey, although a fourth stop, at Weissenfels, is included.

**Airports Limited Statutory Meeting.**—At the statutory meeting of Airports Limited—the formation of which was recorded on page 1176 of THE RAILWAY GAZETTE for June 14—held in London on August 12, the Chairman, the Rt. Hon. Viscount Goschen, supported by among others Sir Felix Pole, said that they had completed the purchase of London East Airport at Gravesend, and were confident that the airport would prove attractive to the various aviation interests. They already had one aircraft manufacturing company as tenants. It was an operating airport and a revenue was already being obtained there. At Gatwick the work on the terminal building and one hangar had been begun. The levelling and clearing of the aerodrome



was proceeding apace, the diverting of the River Mole was almost completed, and the station which was being built by the Southern Railway to deal with increased rail facilities on the main electrified Brighton line was nearing completion. Negotiations had reached a very advanced stage with one important air line for the use of London South Airport, and negotiations were also proceeding satisfactorily with several smaller air transport concerns. (It was announced yesterday, Thursday, that Hillman's Airways Limited had arranged to transfer its London terminus to the London South Airport, Gatwick, at the end of the summer season.—ED. R.G.)

**British Travel Publicity in Canada.**—The annual Canadian National Exhibition, which is anticipated to be attended by nearly 2,000,000 people, will open at Toronto on August 23. The Travel and Industrial Development Association of Great Britain and Ireland is exhibiting in the British section for the fifth year in succession, but this year with double its usual space.

A large mural photograph of the King's silver jubilee procession leaving Buckingham Palace on May 20 is the central feature. There will be an imposing display of British railway posters, which are greatly esteemed in Canada and the United States. The demand for copies last year was so great, particularly from schoolmasters, that the British railways are arranging to have a large supply on sale at their Canadian agency in Montreal.

**Road Accidents.**—The Ministry of Transport return for the week ended August 10, 1935, of persons killed or injured in road accidents is as follows. The figures in brackets are those for the corresponding period of last year:—

	Killed, including deaths resulting from previous accidents	Injured
England ...	132 (134)	4,952 (4,755)
Wales ...	9 (17)	323 (351)
Scotland ...	20 (9)	444 (493)
	161 (160)	5,719 (5,599)

The total fatalities for the previous week were 138, as compared with 148 for the corresponding period of last year.

## British and Irish Traffic Returns

GREAT BRITAIN	Totals for 32nd Week			Totals to Date		
	1935	1934	Inc. or Dec.	1935	1934	Inc. or Dec.
L.M.S.R. (6,925½ mls.)						
Passenger-train traffic...	771,000	735,000	+ 36,000	15,643,000	15,241,000	+ 402,000
Merchandise, &c. ...	343,000	346,000	- 3,000	14,111,000	14,046,000	+ 65,000
Coal and coke ...	145,000	150,000	- 5,000	7,194,000	7,193,000	+ 1,000
Goods-train traffic ...	488,000	496,000	- 8,000	21,305,000	21,239,000	+ 66,000
Total receipts ...	1,259,000	1,231,000	+ 28,000	36,948,000	36,480,000	+ 468,000
L.N.E.R. (6,336 mls.)						
Passenger-train traffic...	519,000	490,000	+ 29,000	10,101,000	9,815,000	+ 286,000
Merchandise, &c. ...	249,000	253,000	- 4,000	9,779,000	9,781,000	- 2,000
Coal and coke ...	174,000	182,000	- 8,000	6,980,000	7,171,000	- 191,000
Goods-train traffic ...	423,000	435,000	- 12,000	16,759,000	16,952,000	- 193,000
Total receipts ...	942,000	925,000	+ 17,000	26,860,000	26,767,000	+ 93,000
G.W.R. (3,750 mls.)						
Passenger-train traffic...	357,000	333,000	+ 24,000	6,527,000	6,415,000	+ 112,000
Merchandise, &c. ...	122,000	121,000	+ 1,000	5,726,000	5,662,000	+ 64,000
Coal and coke ...	52,000	60,000	- 8,000	3,092,000	3,117,000	- 25,000
Goods-train traffic ...	174,000	181,000	- 7,000	8,818,000	8,779,000	+ 39,000
Total receipts ...	531,000	514,000	+ 17,000	15,345,000	15,194,000	+ 151,000
S.R. (2,171 mls.)						
Passenger-train traffic...	478,000	444,000	+ 34,000	9,552,000	9,272,000	+ 280,000
Merchandise, &c. ...	48,000	53,500	- 5,500	1,925,500	2,038,000	- 112,500
Coal and coke ...	17,000	19,500	- 2,500	934,500	979,000	- 44,500
Goods-train traffic ...	65,000	73,000	- 8,000	2,860,000	3,017,000	- 157,000
Total receipts ...	543,000	517,000	+ 26,000	12,412,000	12,289,000	+ 123,000
Liverpool Overhead ...	1,655	1,536	+ 119	37,740	36,596	+ 1,144
(6½ mls.)						
Mersey (4½ mls.) ...	4,710	4,240	+ 470	129,111	131,935	- 2,824
*London Passenger Transport Board ...	538,600	521,500	+ 17,100	3,270,100	3,202,100	+ 68,000
IRELAND.						
Belfast & C.D. pass. (80 mls.)	4,220	3,729	+ 491	82,655	81,655	+ 1,000
" " goods	488	449	+ 39	16,047	16,598	- 551
" " total	4,708	4,178	+ 530	98,702	98,253	+ 449
Great Northern pass. (543 mls.)	18,800	18,050	+ 750	334,050	314,250	+ 19,800
" " goods	6,750	7,450	- 700	288,850	274,550	+ 14,300
" " total	25,550	25,500	+ 50	622,900	588,800	+ 34,100
Great Southern pass. (2,124 mls.)	45,449	41,122	+ 4,327	771,521	756,622	+ 14,899
" " goods	27,147	24,445	+ 2,702	1,084,228	1,010,368	+ 73,860
" " total	72,596	65,567	+ 7,029	1,855,749	1,766,990	+ 88,759

\* 6th week, the receipts for which include those undertakings not absorbed by the L.P.T.B. in the corresponding period last year; last year's figures are, however, adjusted for comparative purposes

## British and Irish Railways Stocks and Shares

Stocks	Highest 1934	Lowest 1934	Prices	
			Aug. 14, 1935	Rise/ Fall
G.W.R.				
Cons. Ord. ...	661½	481½	501½*	+1½
5% Con. Prefce. ...	118	109	121½*	-2
5% Red. Pref. (1950) ...	115	107	111½*	-2
4% Deb. ...	117	105	115½*	—
4½% Deb. ...	119	109	115½	—
4½% Deb. ...	129½	115½	127½	—
5% Deb. ...	135	126½	138½	—
2½% Deb. ...	75	64	78	—
5% Rt. Charge ...	134½	123½	136½	—
5% Cons. Guar. ...	132½	121½	134*	-1½
L.M.S.R.				
Ord. ...	301½	191½	21	—
4% Prefce. (1923) ...	64½	41	56	+1
4% Prefce. ...	87	69½	84*	+1
5% Red. Pref. (1955) ...	107	92½	103½*	-1
4% Deb. ...	114½	100½	107½	—
5% Red. Deb. (1952) ...	118½	111½	115½	—
4% Guar. ...	106½	96½	103*	-1
L.N.E.R.				
5% Pref. Ord. ...	245½	131½	111½	+1½
Def. Ord. ...	111½	67½	61½	+5½
4% First Prefce. ...	76	59½	62	+1½
4% Second Prefce. ...	47	25½	24½	+2
5% Red. Pref. (1955) ...	94½	80	83½	+1
4% First Guar. ...	104	92	100*	-1
4% Second Guar. ...	97½	86½	94*	-1
3% Deb. ...	90	74½	82	+1½
4% Deb. ...	114	99½	106	—
5% Red. Deb. (1947) ...	117	108	113½	—
4½% Sinking Fund Red. Deb. ...	111½	105½	110	—
SOUTHERN				
Pref. Ord. ...	90	63½	83*	—
Def. Ord. ...	325½	19	22	—
5% Prefce. ...	118½	107½	121½*	-2
5% Red. Pref. (1964) ...	115½	107½	114½*	-2
5% Guar. Prefce. ...	132	120½	133½*	-2
5% Red. Guar. Pref. (1957) ...	119½	113	117½*	-2
4% Deb. ...	116½	103½	114½	+1½
5% Deb. ...	134	124½	136½	—
4% Red. Deb. ...	113½	105½	113½	—
1962-67				
BELFAST & C.D.				
Ord. ...	6	5	4	—
FORTH BRIDGE				
4% Deb. ...	110	100	108½	—
4% Guar. ...	110	100	107½	—
G. NORTHERN (IRELAND)				
Ord. ...	93½	41½	14	-1
G. SOUTHERN (IRELAND)				
Ord. ...	25	12½	32	—
Prefce. ...	21½	13½	46	-1½
Guar. ...	48	39	75	—
Deb. ...	67	59	80	—
L.P.T.B.				
4½% "A" ...	126	115	124½	—
5% "A" ...	135½	124½	134½	—
4% "T.F.A." ...	113½	107½	111	—
5% "B" ...	131½	118	127½	—
5% "C" ...	97	73	100	+2
MERSEY				
Ord. ...	15½	7	12	—
4% Perp. Deb. ...	93½	82½	94½	—
3% Perp. Deb. ...	66½	61½	70½	—
3% Perp. Prefce. ...	54	44½	52½	—

\* ex dividend

## CONTRACTS AND TENDERS

### New Electric Coaches for L.P.T.B.

The London Passenger Transport Board has placed orders for a total of 116 electric coaches, comprising 58 all-steel two-car non-articulated units, each consisting of one driving-motor coach and one control trailer coach, and fitted with automatic couplings, air-operated doors, low voltage parallel lighting from 50-volt supply, and electro-pneumatic braking. The orders are equally divided between the Birmingham Railway & Wagon Co. Ltd. and the Gloucester Railway Carriage & Wagon Co. Ltd. and the coaches are required as replacement stock for service on the Hammersmith & City Line and extension to and from Barking. It will be recalled that recent orders placed for a total of 82 vehicles for District Line service were also recorded in this column in our issues of April 5 and June 7.

The South African Railways & Harbours Administration has placed orders with Anderston Foundry Co. Ltd. for points and crossings at a total price of £10,812 (ref. B6981) and with Colvilles Limited for fishplates at a total price of £9,644 (ref. B7059).

The Egyptian State Railways Administration has placed the following orders:—

Westinghouse Brake & Saxby Signal Co. Ltd.: Signalling materials (E.S.R. 24.120, total price £399 7s. 11d.).  
A.E.G.: Cable (E.S.R. 30.176, total price £177 5s.).  
S. A. Baume & Mercier: Lattice signal posts (E.S.R. 24.119, total cost £351).  
Fried. Krupp A.G.: Axles (E.S.R. 21.354, total cost £660).

The Gloucester Railway Carriage & Wagon Co. Ltd. has received an order from the South Indian Railway Administration, to the inspection of Messrs. Robt. White & Partners, for three bogie carriage underframes, complete with wheels and axles and rack and vacuum brakes for the Nilgiri mountain section.

The following orders have also been placed by the South Indian Railway Administration to the inspection of Messrs. Robt. White & Partners:—  
Linley & Co. Ltd.: 26 copper flanged and flat firebox plates; and H. J. Skelton & Co. Ltd.: 31 tons of steel bars and sheets.

### Rolling Stock Required in Greece

The Piræus - Athens - Peloponnesus Railways Administration, Athens, has decided to invite international tenders for the undermentioned rolling stock, states Reuters Trade Service: Eight diesel railcars for express service; eight diesel railcars for local service; three steam locomotives; and 120 goods wagons ventilated and for cold storage, the latter being for the transport of fruit and vegetables. By the purchase of the diesel units it is hoped to shorten the time taken between Athens and Patras from 7½ to 5½ hours and between Athens and Olympia

from 12½ to 7½ hours. This statement should be read in conjunction with the paragraph concerning proposals to buy rolling stock, locomotives and equipment appearing in this column in our issue for January 4, 1935.

The Belgian State Railways Administration is reported to have placed an order with Belgian manufacturers for 500 steel coaches.

Hurst Nelson & Co. Ltd. is reported to have received orders for 210 12-ton coal wagons, 40 of which are required for a Fifeshire coal company and 170 for a Yorkshire colliery.

Leyland Motors Limited has received the following orders from railway and railway - associated road transport operators:—London Passenger Transport Board, 20 Cub passenger vehicles; Southdown Motor Services Limited, 14 Tiger passenger vehicles and 12 Cub passenger vehicles; and United Automobile Services Limited, five oil-engined passenger vehicles.

### Locomotives and Rolling Stock for China

It is understood that the Chinese Government Purchasing Commission, on behalf of the Ministry of Railways, China, is placing orders for locomotives and coaches for the Canton-Hankow Railway, to the inspection of Messrs. Sandberg, as follows:—

Vulcan Foundry Co. Ltd.: Eight standard-gauge two-cylinder 4-8-4 locomotives with double-bogie tenders and having cylinders 21 in. diam. by 29½ in. stroke; coupled wheels 5 ft. 9 in. diam.; boiler pressure 213 lb. per sq. in.; estimated adhesion weight 64 tons; estimated weights in working order, engine 109.3 tons, and tender, 55.1 tons, and fitted with mechanical stokers. These engines are similar to the 16 ordered from the same builders in November of last year.

Birmingham Railway Carriage & Wagon Co. Ltd.: A total of 34 standard-gauge coaches, comprising four third-class sleeping cars, five second-class day cars, five baggage and guards' vans, five baggage and mail vans, five first-class dining cars, five first-class sleeping cars and five second-class sleeping cars.

### Boiler Enquiries.

Tenders are invited in London by the Stores Purchase Committee, Government of Mysore, for spare locomotive boilers for the Mysore State Railways, through Messrs. Rendel, Palmer & Tritton, 55, Broadway, Westminster, S.W.1. Tenders are receivable by October 8.

The Chief Controller of Stores, Indian Stores Department (Engineering Section), Simla, invites tenders, receivable by September 7, for one oil-fired normalising furnace complete with trolley and burner required for the G.I.P. Railway. Tenders are also invited, receivable by September 14, for one rivet making machine and one shearing, punching and cropping machine for the G.I.P. Railway.

Tenders are invited by the Bengal-Nagpur Railway, receivable by September 5, at 132, Gresham House, Old Broad Street, London, E.C.2, for 1,200 steel tyres for carriages and wagons, 1,500 drawbars and one 10-ton steam travelling crane.

The Egyptian State Railways Administration invites tenders receivable at the General Management, Cairo, by September 21 for 50,000/125,000 steel sleepers, 147/370 metric tons of clips and 100/250 metric tons clipbolts and nuts for steel sleepers.

### Coaches for Nigeria

The Metropolitan Cammell Carriage and Wagon Co. Ltd., has received an order from the Crown Agents for the Colonies for six all-steel bogie third class coaches for the Nigerian Railway, and generally similar to those recently constructed by the same builder for this railway. Sheffield-Twinberrow double-frame welded-type bogies will be fitted to the coaches comprising the new order. Three will have Framwel axleboxes, and the remainder Isothermos axleboxes.

### Rolling Stock for South Manchuria

Reuters Trade Service learns from Continental papers that a sum of 30,000,000 yen is provided for in this year's budget of the South Manchuria Railway Company for the manufacture of rolling stock. The coaches, wagons, and locomotives will be built partly at the company's works at Shakako, near Dairen, partly at the Dairen Engineering Works, and partly in Japan.

The locomotive manufacturing industry in the Soviet Union in July fulfilled the plan for the month to the extent of 102.3 per cent., 135 locomotives being produced instead of the 132 called for, says Reuters Trade Service from Moscow.

### Locomotives for India

The Vulcan Foundry Co. Ltd. has received an order from the Great Indian Peninsula Railway through Heatly & Gresham Limited for two broad-gauge XP class standard 4-6-2 locomotives with 18.5-ton axle load and complete with double bogie tenders. One of these locomotives is to be fitted with Skefko roller bearings and the other with Timken roller bearings. The respective prices of these locomotives, delivered fully erected f.o.r. Bombay, are Rs. 1,77,918 and 1,79,606, less allowance for boiler tubes and general steel castings of approved Continental make to be fitted, of Rs. 2,493 per locomotive. Delivery is to be effected in 42 weeks from receipt of letter of acceptance. The engines will be subject to the inspection of the India Store Department, London.

Whitelegg & Rogers has received an order from the Chinese Purchasing Commission for three Ajax power-operated presses for use in connection with the Ajax system of grease lubrication fitted to locomotives of the Chinese National Railways.

Whitelegg & Rogers has also received an order from the Buenos Ayres Great Southern Railway for complete Ajax grease lubricating equipment for converting six main-line locomotives from oil to grease lubrication.

## OFFICIAL NOTICES

## Bengal-Nagpur Railway Co. Ltd.

**T**HE Directors are prepared to receive tenders for:—

- (A) 1,200 Steel Tubes for carriages and wagons.
- (B) 1,500 Drawbars.
- (C) 1-10 ton Steam Travelling Crane.

Specifications and forms of tender can be obtained at the Company's Offices, 132, Gresham House, Old Broad Street, London, E.C.2, on or after Monday, 12th of August, 1935.

A fee of 20s. will be charged for each copy of the specification "A" and 10s. for each copy of the specifications "B" and "C," which is not returnable.

Tenders must be submitted not later than noon on Thursday, 5th September, 1935.

The Directors do not bind themselves to accept the lowest or any tender, and reserve to themselves the right of reducing or dividing the order.

By Order of the Board,  
P. W. GIBBS,  
Assistant Secretary.

## South Indian Railway Co. Ltd.

**T**HE Directors are prepared to receive tenders for the supply of:—

## STEELWORK FOR BRIDGES.

Specifications and Forms of Tender will be available at the Company's Offices, 91, Petty France, Westminster, S.W.1.

Tenders addressed to the Chairman and Directors of the South Indian Railway Company, Limited, marked "Tender for Steelwork for Bridges," with the name of the firm tendering, must be left with the undersigned not later than 12 noon on Friday, the 30th August, 1935.

The Directors do not bind themselves to accept the lowest or any tender.

A charge, which will not be returned, will be made of 10s. for each copy of the Specification.

Copies of the drawings may be obtained at the Offices of the Company's Consulting Engineers, Messrs. Robert White & Partners, 3, Victoria Street, S.W.1.

E. A. S. BELL,  
Managing Director.

91, Petty France,  
Westminster, S.W.1.  
14th August, 1935.

## The Bengal &amp; North Western Railway Co. Ltd.

**T**HE Directors are prepared to receive tenders for the supply of:—

200 FOUR-WHEELED WAGONS  
(I.R.C.A. Type M.C.3.)

as per specification to be seen at the Company's Offices.

Tenders addressed to the undersigned, and envelope marked "Tender for Wagons," with name of firm tendering, to be lodged not later than noon on the 31st day of August, 1935.

For each specification a fee of £1 will be charged which cannot, under any circumstances, be returned.

The Directors do not bind themselves to accept the lowest or any tender.

By order of the Board,  
W. R. IZAT,  
Managing Director.

237, Gresham House,  
Old Broad Street,  
London, E.C.2.  
August 9, 1935.

## H.E.H. The Nizam's State Railway

**A**PPPLICATIONS are invited for the post of Assistant Traffic Superintendent on this railway.

## Qualifications.

1. Age 23 to 30 years.
2. A good general education.
3. Applicants must have completed a full 3 years' course of training as a probationary assistant traffic superintendent on a Class I railway in India or on a British railway, and must have had at least 2 years' practical experience as an Assistant Traffic (Transportation or Commercial) Superintendent.
4. Preference will be given to applicants who are subjects of H.E.H. the Nizam.

## Salary.

According to qualifications, in the grade Cosmania Sicca Rupees 400-25-600. (Cosmania Sicca rupees are the currency of the Hyderabad State. The rate of exchange is not guaranteed, but ordinarily varies from 0.8 Rs. 115 to 0.8 Rs. 117 per 100 British India rupees.)

Applications (by letter only) stating age and giving full particulars of qualifications, training and experience, with copies of testimonials, should be addressed to the undersigned not later than 24th August, 1935.

F. ADAMS,  
Secretary.

H.E.H. the Nizam's State Railway Board,  
269, Winchester House,  
Old Broad Street,  
London, E.C.2.  
13th August, 1935.

**OFFICIAL ADVERTISEMENTS** intended for insertion on this page should be sent in as early in the week as possible. The latest time for receiving official advertisements for this page for the current week's issue is noon on Thursday. All advertisements should be addressed to:—*The Railway Gazette*, 33, Tothill Street, Westminster, London, S.W.1.

## RAILWAY AND OTHER REPORTS

**London Passenger Transport Board.**—The L.P.T.B. announces that the Minister of Transport has prescribed that the period within which the board shall submit to him its reports and accounts for the years 1933-34 and 1934-35 shall be not later than October 31 next. The Minister has further prescribed that a payment to the holders of London Transport "C" stock on account of interest in respect of the first and second years of the board's operations shall be made not later than October 31 next. The board will meet in ordinary course on October 3 to determine the rate of such payment

and will arrange the payment during that month accordingly.

## Belfast &amp; County Down Railway.

—The accounts for the half-year ended June 30 have been completed and audited. The results do not permit of the payment of any dividend on the  $4\frac{1}{2}$  per cent. "A" preference stock for the half year, nor of any interim dividend in respect of the 5 per cent. and 4 per cent. preference stocks and the ordinary stock. Dividend on "A" preference is contingent on half-yearly profits; that on the 4 per cent. preference dividend is cumulative and has

been paid to December 31, 1925. The 4 per cent. preference has had no dividend since March 1, 1926; the ordinary received 2 per cent. in 1925.

## Grand Union Canal Company.

—The directors report that no dividend on the capital stock has been earned during the half-year ended June 30 last. Long-distance traffic has been satisfactory, but there has been again a large falling off in revenue from the carriage of coal on the canal, mainly attributable to the closing down of electric power stations on the Regent's Section. The directors look for an increase of traffic with the additional boats now being built, and energetic steps are being taken to secure such traffic. The water resources are considerably better than last year.

**WEST OF SCOTLAND ELECTRIFICATION SCHEMES.**—Further advance was made by Glasgow Corporation on Friday last with proposals for electrifying the railways in the city and West of Scotland. Representatives of the L.M.S.R. and L.N.E.R. attended a conference in the City Chambers with the Special Committee of the Corporation appointed to consider the matter. Mr. William Crozier, the Operating Manager, Scotland, L.M.S.R., and Mr. George Mills, the Divisional General Manager of the L.N.E.R., represented the railway companies. A plan and a report by the City Engineer, Mr. Thomas Somers, were before the conference. It was

pointed out that about two and a half million persons used the railways to the city daily and a plan was exhibited showing the areas that it was claimed would benefit by electrification.

**THE L.N.E.R. SILVER JUBILEE EXPRESS.**—Preparations by the L.N.E.R. for the inauguration of the Silver Jubilee Express between Newcastle and London which will be timed to do the journey of 268 miles in 4 hours are well in hand and already a large number of reservations of seats for the inaugural run on September 30 has been made. The latest of these reservations come from as far abroad as Australia and

India and there are indications that a number of Americans on holiday in this country are intending to travel on this train before returning to the U.S.A. As already announced, the train will leave Newcastle daily, except Saturdays and Sundays, at 10.0 a.m. and will arrive at King's Cross at 2.0 p.m., the return journey being timed at 5.30 p.m. from King's Cross station. First and third class restaurant cars will be provided on the train, which will have a total seating capacity of 194. For the benefit of passengers from Middlesbrough, Stockton, and Hartlepool a stop will be included in each direction at Darlington.



## Railway Share Market

Whilst holiday influences are making themselves felt in the stock and share markets, the amount of business is sufficient to maintain a firm tendency in home railway stocks. Traffic returns showing increases had no effect on prices on Wednesday. On balance, London & North Eastern issues have been supported, buyers in small amounts being forthcoming on the view that the development of the iron and steel industry must be of ultimate benefit to the railway. The reference by Mr. Runciman to plans for the development of industry in the North-Eastern Area of the company also created a trend in favour of London & North Eastern stocks. The first and second preference stocks derived most advantage, but there was a fractional advance in both the preferred and de-

ferred stocks, although it is fully recognised that the latter stock is remote from dividend distribution.

Southern preferred and deferred stocks again responded to the fine weather conditions and the likelihood of passenger traffic expanding to a later date in the year than in 1934. London Midland & Scottish 1923 preference stock was the chief favourite among the L.M.S. issues, as it is estimated that it combines possibilities of capital appreciation with dividend return to a greater degree than other issues. The 4 per cent. first preference and the 5 per cent. redeemable preference stocks are still considered to be the most satisfactory of the high-yielding stocks, giving about 4½ per cent. London Transport "C" stock changed hands freely at just below par. The

dividend announcement will be made on October 3, and the market is taking a favourable view of the outlook.

Abroad Argentine issues made a slight recovery on the first day of the new Stock Exchange account. The past 21-day account proved disastrous for early buyers of the preference stocks. Buenos Ayres Great Southern 5 per cent. and 6 per cent. preference "made up" on Monday at eight and seven points respectively below the prices prevailing on July 22. Argentine Great Western 5 per cent. debenture stock was marked up two points and B.A. Pacific debenture stocks were better. Nitrate Railway issues moved strongly in favour of holders. San Paulo ordinary dropped below the 40 level, or eight points down on the last four weeks.

Traffic Table of Overseas and Foreign Railways Publishing Weekly Returns

Railways	Miles open 1934-35	Week Ending	Traffic for Week		No. of Weeks	Aggregate Traffic to Date			Shares or Stock	Prices					
			Total this year	Inc. or Dec. compared with 1934		Totals		Increase or Decrease		Highest 1934	Lowest 1934	Aug. 14, 1935	Yield % (See Note)		
						This Year	Last Year								
South & Central America.															
Antofagasta (Chili) & Bolivia	830	11.8.35	9,050	—	6,560	32	392,490	435,050	—	42,560	Ord. Stk.	263½	19	22	NH
Argentine North Eastern ..	753	10.8.35	7,673	+	22	6	47,319	46,962	+	357	"	11	67½	6	NH
Argentine Transandine ..	111	—	—	—	—	—	—	—	—	—	A. Deb.	52	45	48	85½
Bolivar ..	174	July, 1935	5,300	+	200	30	44,700	43,850	+	850	6 p.c. Deb.	10	61½	10	NH
Brazil ..	—	—	—	—	—	—	—	—	—	—	Bonds.	135½	107½	13	31½
Buenos Ayres & Pacific ..	2,806	10.8.35	74,031	+	3,737	6	436,057	423,731	+	12,326	Ord. Stk.	161½	81½	71½	NH
Buenos Ayres Central ..	190	27.7.35	\$128,300	+	\$2,200	4	\$490,100	\$509,200	—	\$19,100	Mt. Deb.	23	10	16	NH
Buenos Ayres Gt. Southern ..	5,085	10.8.35	117,098	—	8,981	6	676,445	752,423	—	75,978	Ord. Stk.	35	22	22	NH
Buenos Ayres Western ..	1,930	10.8.35	42,656	—	3,400	6	238,859	268,245	—	29,386	"	27½	181½	17	NH
Central Argentine ..	3,700	10.8.35	119,075	—	19,353	6	731,332	788,281	—	56,949	"	23	131½	13	NH
Do. ..	—	—	—	—	—	—	—	—	—	—	Dfd.	14	7	7	NH
Cent. Uruguay of M. Video	273	10.8.35	7,587	—	9,372	6	51,268	100,478	—	49,210	Ord. Stk.	151½	8	41½	NH
Do. Eastern Extn.	311	10.8.35	1,163	—	585	6	8,010	8,869	—	859	"	—	—	—	—
Do. Northern Extn.	185	10.8.35	957	+	219	6	6,817	5,075	+	1,742	"	—	—	—	—
Do. Western Extn.	211	10.8.35	803	+	177	6	3,877	3,419	+	458	"	—	—	—	—
Cordoba Central ..	1,218	10.8.35	33,670	—	1,970	6	205,320	215,780	—	10,460	Ord. Inc.	6	3	2	NH
Costa Rica ..	188	30.6.35	15,519	—	4,778	52	191,757	218,120	—	26,363	Stk.	305½	23½	34	57½
Dorada ..	70	July, 1935	13,600	+	3,600	30	80,400	70,200	+	10,200	1 Mt. Db.	103	95	102½	57½
Entre Rios ..	810	10.8.35	11,710	+	1,492	6	71,210	63,005	+	8,205	Ord. Stk.	211½	12	10	NH
Great Western of Brazil ..	1,082	10.8.35	5,000	—	900	32	242,500	243,700	—	1,200	Ord. Sh.	78	58	12	NH
International of Cl. Amer.	794	June, 1935	\$371,547	+	\$118,226	26	\$2,632,185	\$2,719,993	—	\$87,808	"	—	—	—	—
Interoceanic of Mexico ..	—	—	—	—	—	—	—	—	—	—	1st Pref.	1/—	1/—	12	NH
La Guaira & Caracas ..	225½	July, 1935	3,725	—	730	30	27,570	25,890	+	1,680	Stk.	125½	78	81½	NH
Leopoldina ..	1,918	10.8.35	22,305	—	8,579	32	529,744	658,533	—	129,789	Ord. Stk.	145½	7	31½	NH
Mexican ..	483	7.8.35	\$236,000	+	\$29,600	6	\$1,334,800	\$1,227,100	+	\$107,700	"	31½	11½	12	NH
Midland of Uruguay ..	319	July, 1935	5,218	—	4,243	4	5,218	9,461	—	4,243	"	11½	12	12	NH
Nitrate ..	401	31.7.35	7,811	+	3,169	30	88,805	85,300	+	3,505	Ord. Sh.	329½	51/—	212	NH
Paraguay Central ..	274	10.8.35	\$1,424,000	+	\$167,000	6	\$9,768,000	\$5,880,000	+	\$3,880,000	Pr. Li. Stk.	84	67	77	71½
Peruvian Corporation ..	1,059	July, 1935	73,813	+	21,196	4	73,813	52,617	+	21,196	Pref.	141½	8	10	NH
Salvador ..	100	3.8.35	€11,760	+	€2,539	5	€65,348	€52,041	+	€13,307	Pr. Li. Db.	75	70	65	71½
San Paulo ..	153½	4.8.35	22,925	—	3,130	31	792,351	860,162	—	67,811	Ord. Stk.	86	67	401½	65½
Taitai ..	184	July, 1935	2,525	—	103	4	2,525	2,628	—	103	Ord. Sh.	218	17½	112	61½
United of Havana ..	1,365	10.8.35	16,992	—	862	6	111,512	105,411	+	6,071	Ord. Stk.	6	2	2	NH
Uruguay Northern ..	73	July, 1935	612	—	444	4	612	1,056	—	444	Deb. Stk.	61½	3	41½	NH
Canada.															
Canadian National ..	23,734	7.8.35	631,002	+	53,880	31	19,636,945	19,275,127	+	361,818	"	—	—	—	—
Canadian Northern ..	—	—	—	—	—	—	—	—	—	—	Perp. Dbs.	781½	511½	551½	75½
Grand Trunk ..	—	—	—	—	—	—	—	—	—	—	4 p.c. Gar.	1041½	971½	1001½	31½
Canadian Pacific ..	17,211	7.8.35	480,800	+	3,600	31	14,012,400	14,062,800	—	50,400	Ord. Stk.	185½	111½	101½	NH
India.															
Assam Bengal ..	1,329	20.7.35	33,097	—	5,005	16	361,062	436,166	—	75,104	Ord. Stk.	881½	72	831½	39½
Barsi Light ..	202	20.7.35	6,495	+	1,028	16	50,887	51,997	—	1,110	Ord. Sh.	1041½	98½	871½	65½
Bengal & North Western ..	2,114	31.7.35	66,742	+	1,974	17	889,642	925,465	—	35,823	Ord. Stk.	297½	262	297½	58½
Bengal Doonars & Extension ..	161	20.7.35	3,422	—	919	16	36,128	40,601	—	4,473	"	125½	124	125½	59½
Bengal-Nagpur ..	3,268	10.7.35	156,075	+	7,902	14	1,803,200	1,734,346	+	68,854	"	105½	96	102½	37½
Bombay, Baroda & Cl. India ..	3,072	31.7.35	175,575	—	29,775	17	2,736,975	2,757,375	—	20,400	"	115	108½	113½	58½
Madras & South'n Mahratta ..	3,230	20.7.35	134,250	—	19,415	16	1,709,026	1,906,523	—	197,497	"	131	122½	122½	73½
Rohilkund & Kumaon ..	546	31.7.35	10,076	—	1,215	17	170,132	178,710	—	8,578	"	263	250	292½	51½
South India ..	2,526	20.7.35	112,465	+	2,991	16	1,278,503	1,303,712	—	25,209	"	119	115	117½	61½
Various.															
Beira-Umtali ..	204	May, 1935	70,053	+	11,181	34	520,214	399,848	+	120,366	"	—	—	—	—
Bilbao River & Cantabrian ..	15	June, 1935	1,261	—	97	26	9,905	10,459	—	554	"	—	—	—	—
Egyptian Delta ..	622	20.7.35	5,524	—	389	16	58,038	58,855	—	817	Prf. Sh.	213½	15½	178	55½
Great Southern of Spain ..	104	3.8.35	1,658	—	284	31	54,526	63,574	—	9,048	Inc. Deb.	4	31½	31½	NH
Kenya & Uganda ..	1,625	June, 1935	165,532	—	7,047	26	1,292,777	1,222,928	+	69,849	"	—	—	—	—
Manila ..	—	—	—	—	—	—	—	—	—	—	B. Deb.	50	33	42	85½
Mashonaland ..	913	May, 1935	125,884	+	19,026	34	945,921½	731,020	+	214,901	1 Mg. Db.	101	91½	103	47½
Midland of W. Australia ..	277	June, 1935	11,739	—	292	52	159,573	158,208	+	1,365	Inc. Deb.	100	93	94½	59½
Nigerian ..	1,905	29.6.35	24,202	+	4,848	13	329,613	336,272	—	6,659	"	—	—	—	—
Rhodesia ..	1,538	May, 1935	198,403	+	26,795	34	1,540,993	1,234,884	+	306,099	4 p.c. Db.	1047½	97½	104	31½
South African ..	13,217	20.7.35	540,015	+	48,621	16	8,644,808	7,810,197	+	834,611	"	—	—	—	—
Victorian ..	4,728	Apr., 1935	799,418	+	68,999	43	7,962,662	7,716,599	+	246,063	"	—	—	—	—
Zafra & Huelva ..	112	June, 1935	9,846	—	232	26	65,245	65,801	—	556	"	—	—	—	—

NOTE.—Yields are based on the approximate current prices and are within a fraction of 1/8

† Receipts are calculated @ 1s. 6d. to the rupee. § ex dividend. Salvador and Paraguay Central receipts are in currency

The variation in Sterling value of the Argentine paper peso has lately been so great that the method of converting the Sterling weekly receipts at the par rate of exchange has proved misleading, the amount being overestimated. The statements from July 1 onwards are based on the current rate of exchange and not on the par value